DOCUMENT RESUME

ED 117 556 CE 006 268

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TITLE	Mathematics for Commercial Foods.
INSTITUTION	Rutgers, The State Univ., New Brunswick, N.J. Curriculum Lab.
SPONS AGENCY	New Jersey State Dept. of Education, Trenton. Div. of Vocational Education.
REPORT NO	VT-102-446
PUB DATE	Dec 75
NOTE	258p.
AVAILABLE FROM	Vocational Technical Curriculum Laboratory, Rutgers, The State University, Building 4103, Kilmer Campus, New Brunswick, New Jersey 08903 ($2.50)
EDRS PRICE	MF-$0.83 HC-$14.05 Plus Postage
DESCRIPTORS	*Food Service Occupations; Grade 10; *Instructional Materials; Learning Activities; Mathematics Curriculum; *Mathematics Instruction; *Practical Mathematics; Secondary Education; Study Guides; *Workbooks; Worksheets

ABSTRACT

A review of basic mathematics operations is presented with problems and examples applied to activities in the food service industry. The text is divided into eight units: measurement, fractions, arithmetic operations, money and decimals, percentage, ratio and proportion, wages and taxes, and business records. Each unit contains a series of lessons which follow the format of stated objectives, background information, demonstration or procedure, and assignments. Recipes, guest checks, tax forms, and inventory sheets accompany many of the lessons and serve as worksheets for doing the assignments. A conversion chart showing the number of ounces necessary to make tablespoons, cups, pints, and quarts for many foods is included. (KJ)

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mathematics for
COMMERCIAL FOODS

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MATHEMATICS
FOR
COMMERCIAL FOODS

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December 1975

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ACKNOWLEDGMENTS

I wish to express my thanks to a number of people.

To Blanche Dornfeld, whose book on Commercial Foods Mathematics 1 has served our classes well for many years.

To Mabel Latino for her text, "Mathematics for Cosmetology," which has provided a wealth of new ideas and material which I have used in class and in this text.

To Mrs. Mary Baumlin, Commercial Foods teacher and Melvin Bogdany, Baking teacher, for their help with recipes and pricing.

To Mr. James Schofield, Commercial Art Shop teacher, and to his students, for preparing the front cover.

To Dr. J. Henry Zanzalari, Superintendent of Schools of the Middlesex County Vocational and Technical High School system, who has encouraged the development of new materials for vocational and technical education.

To the students in my classes, who have helped by using this material and making suggestions for its improvement.

To the Teacher

This text is intended to be used in the tenth year. It is the product of a number of years of teaching related mathematics. It is an attempt to improve the basic skills of the student while at the same time relating them to the student's shop experience. The author has attempted to reinforce each basic skill by relating it to a shop problem.

The order of the material presented is the order that the author has found most practical in actual classroom work. The work on measurements, which starts the book, is essential to recipe work. Fractions are needed early for the same reason. Then it's on with the material that generally starts off a more conventional text.

The author recommends working on income tax material in the text when supplemental material is available through the "Teaching Taxes program" issued by the IRS during January and February of each new year.

This is by no means a complete text. Each time the author has used the material, additions have been made to better prepare the student for the assignments.

The use of transparencies made from pages in the text is recommended. Pre- and post-tests, although not included, are well worth considering. The author has included material for bakers, although in a very limited way, because of class composition in his own school.

Your comments and suggestions are most welcome.

Norman Wersan

To the Student

Some knowledge of mathematics is necessary for every occupation, and Commercial Foods is no exception. You may have to change recipes, measure quantities of materials, fill out guest checks, operate the cash register, purchase foods, keep an inventory, and certainly receive wages and pay taxes. All these activities use mathematics.

This textbook provides a review of the basic math operations so essential to doing any mathematics work. In each unit the basic mathematics is applied to activities you will be doing in the food-service industry. There will be word problems and forms to fill out similar to the forms used in cafeterias and restaurants. All of the math in this book should be of help to you in your career.

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UNIT I – MEASUREMENT

Lesson 1 Introduction

Objective: You will learn the importance of standard measuring devices in commercial foods.

Related Information:

Suppose you had a recipe that called for a tablespoonful of dry mustard. What if you didn't have a standard tablespoon? Suppose Company A made nice big tablespoons, and Company B made small tablespoons, and Companies C, D, and X each put out a different size. Would it make any difference in your recipe which tablespoon you had on hand? *You bet it would!*

In this world of ours, where everything from recipes to space-exploring vehicles depends upon measurements of one sort or another, *standard* measurements are absolutely essential. An inch must equal the same distance in California as in New Jersey; a pound must have the same weight in Oregon as in Florida; a pint must hold the same amount wherever you happen to be. If it were not so, no one could ever be sure of getting the same result as anyone else, whatever he or she tried to do. Machinery wouldn't work right, cars wouldn't run, buildings, wouldn't stand straight.........The world would be a mess!

The problem is that, while all countries have standardized their own measurements, they do not all use the same units of measurement. We in the United States have the English system, based on pounds, quarts, and feet, while most of the countries of the world have adopted the metric system, based on grams, liters, and meters. Our country is expected to gradually change over to the metric system because of its simplicity. It is also a fact that many countries refuse to buy our machinery because it is not metric, and this has hurt our industries.

Our country has set up a Bureau of Standards in Washington, D.C., where there is the most accurate measuring equipment, along with the standards which all manufacturers use as a check on their products. When companies make scales, weights, containers, etc., their design is based on the standards kept in Washington.

WHY IS A STANDARD IMPORTANT?

The term "cup" is used very loosely. We know that coffee cups vary in size, shape, and capacity, and yet they are all called cups. We cannot use these for accurate measurement in commercial foods. We must depend on commercially purchased measuring cups that are accurate.

If you measure your own weight and are off an ounce or more, it would not make much difference, but in weighing portions out, you must be accurate to the fraction of an ounce in some cases.

BASIC PRINCIPLES

1. We must select a measuring device which will be accurate enough for the job we assign it.

2. In general, the smaller the measurement we are making, the more accurate the measuring device must be.

3. A measuring device is only as good as the accuracy with which it is *used.*

4. Measuring devices must be periodically checked for accuracy and adjusted if necessary.

In the following pages we will discuss the various types of measures and measuring equipment in common use in commercial foods.

UNIT I – MEASUREMENT

Lesson 2 — Units of Count

Objective: You will gain skill in converting various units of count to other units.

Related Information:

Items for commercial establishments are usually purchased in large quantities. Many are purchased by count. For that reason we must learn the various types of units we will deal with and how to convert from one to another.

Units of Count (abbreviations in brackets)

2 pieces (or units) = 1 pair (pr)
12 pieces (or units) = 1 dozen (doz)
12 dozen = 1 gross (gr)
144 pieces (or units) = 1 gross
12 gross = 1 great gross (gt gr)

Very often we need to convert from one unit to another. Sometimes we are puzzled as to whether to multiply or divide. Whatever type of measurement we are dealing with, we need only remember this general principle: There will always be *more* of a smaller unit, so we *multiply*; there will always be *fewer* of a large unit, so we *divide*.

For example: How many pieces are there in 3 dozen? Well, a *piece* is a *smaller* unit than a *dozen*, so we *multiply*.

3 dozen X 12 pieces in a dozen = 36 pieces

How many gross in 42 dozen? In this case, a gross is a *larger* unit than a dozen, so we *divide*.

$$\frac{42 \text{ dozen}}{12 \text{ dozen in a gross}} = 3\tfrac{1}{2} \text{ gross}$$

ASSIGNMENT

1. How many dozen in a gross? ______
2. How many eggs to a case? (30 dozen to a case) ______
3. How many pieces in a gross and a half? ______
4. If you needed 500 eggs, how many dozen would you need? ______
5. How many cases would you have to order for problem #4? ______
6. How many dozen in 3 gross? ______
7. Write 4½ gross in terms of dozens. ______
8. 468 dozen equals how many gross? ______
9. 216 units equals how many dozen? ______

10. 1,152 units equals how many gross? ____________

11. 7-ounce cups cost $4.40 a dozen.
How much would 6 dozen cost? ____________

12. 9-inch dinner plates cost $6.60 a dozen.
How much would a gross and a half cost? ____________

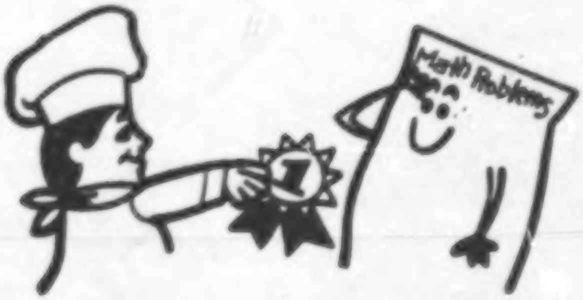
13. 10-ounce water tumblers cost $1.70 a dozen.
How much would 3 gross cost us? ____________

14. Serrated-blade knives cost $2.40 a dozen.
How much are they per knife? ____________

15. In lots of 1 to 11 dozen, plain-blade knives cost $8.20 a dozen.
In lots of 12 to 39 dozen, they cost $8.00 a dozen.

a. Difference in cost per dozen? ____________

b. Difference in cost per knife? ____________



UNIT I – MEASUREMENT

Lesson 3 — Ways of Measuring Ingredients

Objectives: You will understand two of the main ways that ingredients can be measured.
You will know the principal units in each type of measurement.
You will understand the difference between fluid ounces and ounces of weight.

Related Information:

Anyone in the foods trade *must know* measurements.

There are two main ways of measuring ingredients – by *capacity (the size of the container)* and by *weight* (on a *scale*). Capacity includes both liquid and dry measures.

Ways of Measuring Ingredients

1. By capacity
   - a. Liquid
   - b. Dry

   } *teaspoons, tablespoons, ounces, cups, pints, quarts, gallons* (or cubic centimeters and liters)
2. By weight –– *ounces* and *pounds* (or grams and kilograms)

Now all of this would be clear enough except for one bad actor, known as the *ounce.* The ounce is really *two different* measures. Four ounces of cocoa would be weighed on a scale. Four "ounces" of vanilla really means 4 *fluid* (liquid) ounces, and would be measured out with a measuring cup. Ounces used to measure liquids are really fluid ounces, but the word "fluid" is often left out. Confusing, isn't it?

It is perfectly true that, for many substances, one fluid ounce weighs just about one ounce on a scale, but this is only approximate. You should understand that *the fluid ounce measures capacity* (volume, or size), while *the regular ounce measures weight.*

PRE–ASSIGNMENT:

Check as many places as apply to the following measures:

	Unit of:		
	Weight	Liquid Measure	Dry Measure
1. Quart	________	________	________
2. Pound	________	________	________
3. Ounce	________	________	________

ASSIGNMENT:

	Unit of:		
	Weight	Liquid Measure	Dry Measure
1. Tablespoon			
2. Gallon			
3. Gram			
4. Liter			
5. Pint			
6. Cubic centimeter			
7. 2 ounces			
8. Cup			
9. Kilogram			
10. 4 teaspoons			
11. 6 pounds			
12. 3 fluid ounces			
13. 4 ounces			
14. 2 cups			
15. 10 pounds			

UNIT I – MEASUREMENT

Lesson 4 **Measures of Capacity**

Objective: You will review the different units of liquid and dry measure commonly used in the foods trade, and gain skill in converting from one unit to another.

Related Information:

Milk, water, oil, sauces, mayonnaise, soup stock, and similar liquid ingredients are generally measured by capacity (volume) rather than by weight. Dry ingredients such as salt, pepper, and spices are almost always measured by capacity, and such foods as chopped raw vegetables and fruits are often measured out rather than weighed.

The same measurements can be used for both liquid and dry ingredients. Some sizes are more likely to be used for one than for the other, but all can be used for either. You could, for example, have a teaspoon of vanilla as well as a teaspoon of salt. You could have a quart of milk or a quart of chopped celery. You could have a cup of rice as well as a cup of salad oil. In measuring dry ingredients, you know that the surface must be level if the measurement is to be accurate.

The following table of measurements should be memorized, except for the last two items, which you would not normally have to know.

Table of Capacity Equivalents – Liquid and Dry Measure
(Abbreviations in brackets)

3 teaspoons (t) = 1 tablespoon (T)
2 tablespoons = 1 fluid ounce (oz)
8 fluid ounces = 1 cup (c)
16 tablespoons = 1 cup
2 cups = 1 pint (pt)
16 fluid ounces = 1 pint
2 pints = 1 quart (qt)
4 quarts = 1 gallon (gal)
128 ounces = 1 gal
4 gills = 1 pt

When converting from one measure to another, remember that you *multiply* to get *more* of a *smaller* measure, and you *divide* to get *fewer* of a *larger* measure.

PRE–ASSIGNMENT

1. How many pints in 3 quarts? ________
2. How many cups in 2 gallons? ________
3. How many ounces in 8 tablespoons? ________

ASSIGNMENT:

A. Find the number of:

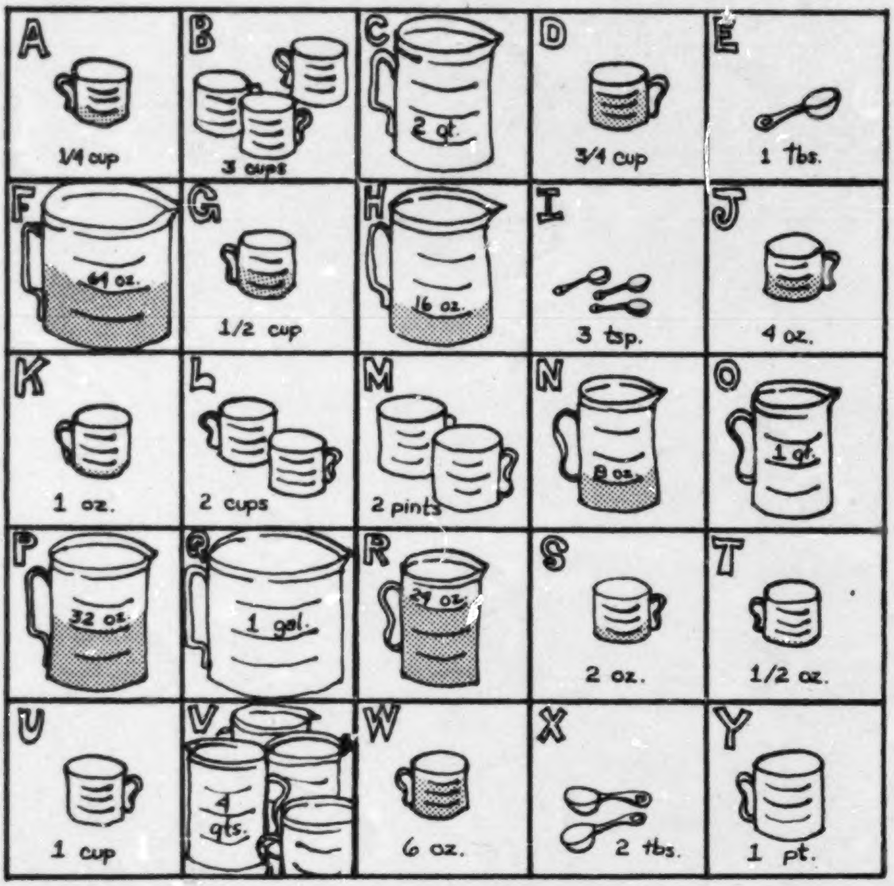
1. pints in 5 qts ________
2. cups in 3 qts ________
3. teaspoons in 2T ________
4. quarts in 10 pts ________
5. pints in 4 gal ________
6. pints in 13 c ________
7. tablespoons in 2 c ________
8. quarts in 3 gal ________
9. ounces in 10T ________
10. quarts in 2.5 gal ________
11. quarts in 6 gal 1 qt ________
12. cups in 5 pts. ________
13. gallons in 12 pts. ________
14. teaspoons in ½ c ________
15. cups in 3½ qts ________
16. cups in 16 oz ________
17. quarts in 9 pts ________
18. ounces in 6 t ________
19. quarts in 14 pts ________
20 ounces in 3 pts ________
21. gallons in 10 qts ________
22. tablespoons in ¾ c ________
23. gallons in 15 qts ________
24. ounces in 2½ c ________
25. ounces in 6 T ________
26. cups in 10 oz ________
27. tablespoons in 12 t ________
28. pints in 2 gal ________
29. teaspoons in 6 T ________
30. cups in 8 T ________

B. Express the following measurements as indicated:

1. 3½ cups to the nearest quart ________
2. 4 gal 1 qt. to the nearest gallon ________
3. 3½ pints to the nearest quart ________
4. 6 gal 3 qts to the nearest gallon ________
5. 9 qts ½ pint to the nearest quart ________
6. 15 cups to the nearest quart ________

A Puzzle for You

Here is a chart full of measurements. Each is equal to one or more of the other measurements. Fill in the *letters* of any other measurements equal to those of the letters listed below.


A
1/4 cup
B
3 cups
C
2 qt.
D
3/4 cup
E
1 tbs.
F
64 oz.
G
1/2 cup
H
16 oz.
I
3 tsp.
J
4 oz.
K
1 oz.
L
2 cups
M
2 pints
N
8 oz.
O
1 qt.
P
32 oz.
Q
1 gal.
R
24 oz.
S
2 oz.
T
1/2 oz.
U
1 cup
V
4 qts.
W
6 oz.
X
2 tbs.
Y
1 pt.

A. ________
B. ________
C. ________
D. ________
E. ________
F. ________
G. ________
H. ________

I. ________
J. ________
K. ________
L. ________
M ________
N. ________
O. ________
P. ________
Q. ________

R. ________
S. ________
T. ________
U. ________
V. ________
W. ________
X ________
Y. ________

UNIT I – MEASUREMENT

Lesson 5 — Measurement by Weight

Objectives: You will review the units of weight.
You will learn the different types of scales used in the foods trade.
You will learn several ways of measuring weight indirectly.

Related Information:

There is much less confusion in measuring by weight than by capacity. We know that 16 ounces equals 1 pound. Someday soon we will deal with grams and kilograms, but until that time comes we will

(1) Multiply by 16 to convert pounds to ounces.
(2) Divide by 16 to convert ounces to pounds.

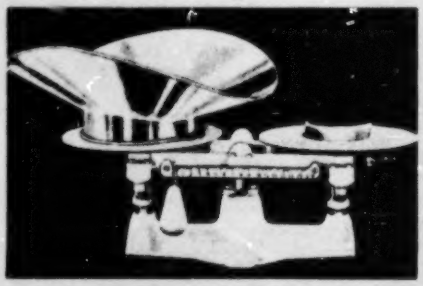
Various types of scales are used in the foods trade.

Platform scale. This is a large scale used to weigh heavy quantities.

The items may be moved onto the scale by a hand truck. Everyone must get off the scale to take the reading. Another method of using the platform scale is to leave the hand truck on the scale so you save energy (and your back) and after taking the reading subtract the weight of the handtruck from the total weight.

Total weight on the dial:	245 lbs.
The hand truck weighs:	42 lb.
Therefore the material weighs:	203 lbs.

Balance scale. Used by bakers. Weights (metal pieces) are put on one side of the scale, and a pan on the other. When the scale balances you have the accurate weight. The weights may be in pounds, and the ounces can be read off on a sliding beam beneath the scale. Your instructor will demonstrate this scale.



Penn Scale Manufacturing Co., Inc.

Baker's scale

Spring scale. Commonly used in the shop. Different types may be purchased, able to handle light or heavy weights. Spring scales may have special designs, such as the vegetable scale, or butcher scale.

Sometimes in the foods trade we weigh foods *indirectly*. Since a quart of many common substances (particularly liquids) weighs about 2 pounds, the cook is often able to weigh liquids by measuring them. (One can also measure liquids by weighing them – if it happens to be more convenient.) For most recipes this is accurate enough.

Example: A recipe calls for 3 qts. . . . . .Weigh 6 pounds of the liquid.

Example: A recipe calls for 4 lbs of water . . . . Measure 2 quarts.

In the same way, scoop sizes are a measure of capacity, but can be used roughly as a measure of weight. The number on the scoop tells how many of that size scoop make up a quart.

Scoop and Dipper Sizes

Scoop number	Approximate weight
8	5 oz.
10	4 oz.
12	3 oz.
16	2–2½ oz.
20	1 2/3 oz.
24	1½ oz.
30	1¼ oz.
40	1 oz

Ladles also are a measure of capacity. They too can be used to get an approximate weight of many substances.

Ladle Sizes and Approximate Weights

Ladle size	Approximate Weight
¼ cup	2 oz.
½ cup	4 oz.
¾ cup	6 oz.
1 cup	8 oz.

Counting by weight

You can make mathematics work for you and save time and effort when you have to count something. Assume someone wants to buy 200 of some item, say cookies. We sell cookies by the pound, not by the count.

Procedure: Place cookies one at a time on the scale until the scale reads one pound. Let us assume you counted 22 cookies. Therefore there are 22 cookies in one pound.

But the customer wants 200 cookies.

If you know how to work a proportion (we'll study proportion later), the easy way to get the proper number of pounds required is:

$$\frac{22 \text{ cookies}}{1 \text{ pound}} = \frac{200 \text{ cookies (wanted)}}{N \text{ pounds}}$$

$$22N = 200$$

$$N = 9 \text{ pounds (approx.)}$$

So you can weigh out 9 pounds of cookies and the customer will get about 200 of them.

Three of the most common ingredients used in cooking are sugar, fat, and flour. It happens that we can get fairly accurate weights of the three by using measures of capacity. Sometimes we will find this more convenient, and for many recipes the capacity measurements are accurate enough.

Approximate Equivalents

	2 cups water or milk	= 1 pound
	2 cups sugar (plus a little more)	= 1 pound
	2 cups fat (plus a little more)	= 1 pound
But	4 cups flour	= 1 pound

ASSIGNMENT:

1. How many ounces in a pound? ________
2. How many pounds in 40 ounces? ________
3. How many ounces in 5 pounds? ________
4. How many ounces in 10 pounds? ________
5. How many pounds in 12 ounces? ________
6. How many cups in a pound of fat? ________
7. How many cups of sifted flour in 1 pound of flour? ________
8. How many cups in 3 pounds of sugar? ________
9. A recipe calls for 2 pounds of milk.
   How many cups is that? ________
10. How many quarts of sifted flour are needed for a recipe calling for 8 lbs of flour? ________

UNIT I – MEASUREMENT

Lesson 6 — Measuring Time

Objective: You will gain skill in solving time problems that can arise in commercial foods establishments.

Related Information:

Time plays an important role in the operation of the commercial food establishment. Food is cooked for a certain length of time; you work and get paid by the hour; time schedules for employees have to be made out; and many of the activities you do involve a specified length of time. In a later unit you will be asked to time an operation in the shop and learn the importance of time and its relation to the cost of operating the shop.

Time Measures

60 seconds (sec) = 1 minute (min)
60 minutes = 1 hour (hr)
24 hours = 1 day (da)
7 days = 1 week (wk)
365 days = 1 year (yr)
366 days = 1 leap year
360 days = 1 year for purpose of figuring simple interest
¼ hour = 15 minutes
½ hour = 30 minutes
¾ hour = 45 minutes

Once again, when converting time measurements, *multiply* to get *more* of a smaller measurement, and *divide* to get *fewer* of a *larger* measurement.

ASSIGNMENT A:

1. How many minutes in 1½ hours? ________

2. 360 minutes is equal to how many hours? ________

3. James worked from:
   6:00 to 12:00 on Monday
   6:00 to 11:30 on Tuesday
   6:00 to 1:00 on Wednesday
   5:30 to 12:00 on Thursday
   6:30 to 2:30 on Friday

   How many hours did he work this week? ________

4. Joan worked from:
   9:00 to 5:00 on Monday
   9:00 to 5:30 on Tuesday
   9:30 to 5:00 on Wednesday
   8:30 to 5:00 on Thursday
   6:00 to 11:00 on Friday

   How many hours did she work this week? ________

5. What was your morning schedule in shop? Indicate what activities you were involved in and how long they lasted.

6. Select 3 different recipes and figure out about how long it would take to prepare them.

7. Calculate how long it would take to wash dishes for 100 people; for 200 people; for 500 people. Figure this out for a typical meat lunch.

TIMING MEAT COOKING:

Instructions for roasting are sometimes given as *minutes per pound* of meat at a given temperature.

Example: At 20 minutes roasting time per pound of beef, how much oven time will be needed for a 5½ lb. roast?

Method 1: Using decimals.

Change the 5½ to 5.5 minutes.

$$\begin{array}{r} 5.5 \\ \times\ \underline{20} \\ 110.0 \end{array}$$

110.0 minutes – or 1 hour and 50 minutes

Method 2: Using fractions.

5½ is changed to $\frac{11}{2}$

$\frac{11}{2} \times 20 = \frac{220}{2} = 110$ minutes

= 1 hour and 50 minutes

ASSIGNMENT B:

1. At 20 minutes roasting time per pound of beef, how much oven time will be needed for 4½ lb. roast? ______ min or __________

2. 8 lb roast? ______ min or __________

3. 6 lb. roast? ______ min or __________

4. 7½ lb roast? ______ min or __________

5. At 35 minutes per pound, how long will it take to roast a 6-pound pork cushion shoulder? ______ min or __________

6. At 30 minutes per pound, how long will it take to roast a 14-pound fresh ham? ______ min or __________

7. At 12 minutes per pound, how long will it take to roast a 22-pound standing beef rib roast? ______ min or __________

Lesson 7 Measuring Temperature

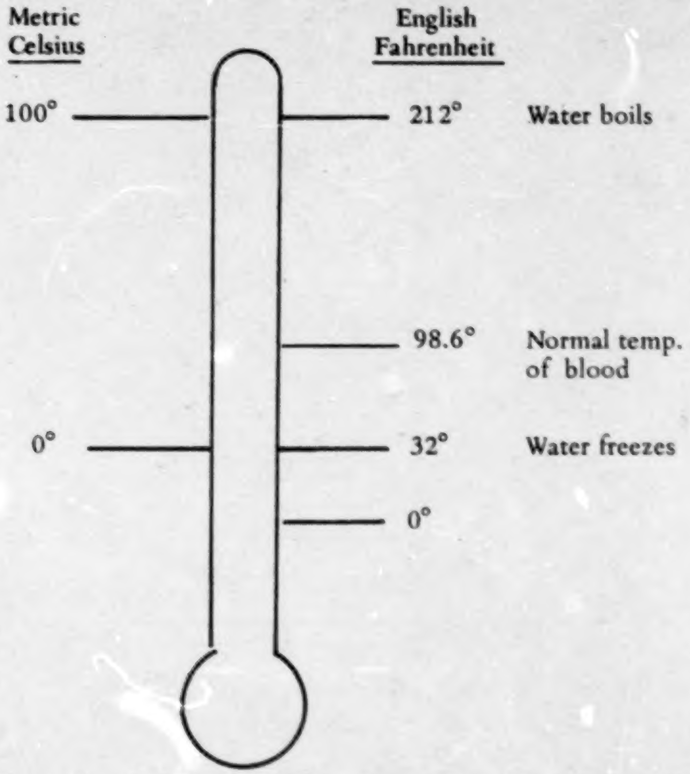
Objective: You will learn the use of temperature in commercial foods.

Related Information:

The standard unit for measuring temperature is the *degree*. A small circle to the upper right of the number is used to indicate the degree.

80°

The standard piece of equipment for measuring temperature is the thermometer. There are two main systems of measuring temperature, the Fahrenheit (English) or Celsius (or centigrade – metric). At present the most commonly used system in this country in restaurants is the English. Someday it will be metric.


Metric
Celsius
English
Fahrenheit
100°
212°
Water boils
98.6°
Normal temp. of blood
0°
32°
Water freezes
0°

Just as with all metric systems, the Celsius is actually easier to use. Note above that the freezing point is 0°C., while it is 32°F in the English system. (Note that C or F is placed next to a temperature reading to indicate which system it is in.) The boiling point is 100°C or 212°F.

How to change from Celsius to Fahrenheit.

There is a formula for converting any temperature given in Celsius to Fahrenheit. It is

$$F = \frac{9}{5}C + 32$$

Example: Convert 50° Celsius to Fahrenheit.

$$F = \frac{9}{5} \times 50 + 32$$

$$F = \frac{450}{5} + 32$$

$$F = 90 + 32$$

$$F = 112^\circ$$

How to change from Fahrenheit to Celsius.

The formula for changing from Fahrenheit to Celsius is

$$C = \frac{5}{9}(F - 32)$$

Example: What is the normal body temperature in degrees Celsius?

$$C = \frac{5}{9}(98.6 - 32)$$

$$C = \frac{5}{9}(66.6)$$

$$C = \frac{333}{9}$$

$$C = 37^\circ$$

ASSIGNMENT

A. Change the following Celsius (Centigrade) temperatures to Fahrenheit:

1. 37° ________

2. 45° ________

3. 200° ________

4. 22° ________

5. 0° ________

B. Change the following Fahrenheit temperatures to Celsius (Centigrade):

1. 350° ________

2. 32° ________

3. 7[illegible] ________

4. 212° ________

5. 0° ________

Lesson 8 **Rounding Off Numbers**

Objective: You will learn what "tolerance" means in recipes. You will learn to round off numbers.

Related Information:

A scientist or engineer needs to have extremely accurate numbers in his work. In the foods trades, however, great accuracy is not usually required.

By tolerance we mean the *degree of accuracy* of any measurement – just how exact the measurement has to be.

At different times we need different degrees of accuracy. When it comes to the manufacture of parts for a mixer or slicer, in order for the machine to operate smoothly for many years the parts must be made very accurately. In making a macaroni-cheese casserole, however, the measurements may be quite rough and the casserole will still taste good.

Experience plays an important part in applying tolerance in Commercial Foods. Part of this experience is taste. Each restaurant and each cook has his or her or its own method. Part of the learning process in shop is to gain the experience necessary to judge tolerance, i.e., how far can I be off in whatever I am making and still produce a good product.

Positive and negative tolerance

Positive means we can be *over* a certain amount with little effect upon the resulting product. *Negative* means we can be *under* a certain amount with little effect upon the resulting product.

If we added too much salt to a recipe we would be in trouble, because it would be difficult to remove. Under such conditions it is better to play it safe and be either very accurate or on the negative side. The customer can always add salt later on.

A freezer or refrigerator could be too cold with little effect, but if it were too warm, the food might be ruined. In this case negative tolerance is more desirable, positive tolerance dangerous.

In heating substances, we should also tend to favor the negative side, since we can always heat the substance longer; but if our oven were too hot we could burn the food.

Rounding Off

Under some circumstances we need to be very accurate. In most cooking, however, this is neither practical nor desirable. We need to know our tolerance, or the amount we can vary without damaging results.

"Rounding off" means being practical in mathematics. If a recipe called for five pounds of potatoes and we had a quarter of a pound extra, we certainly would not want to throw out the extra potato. If the teacher asked us if we had five pounds, we would not state that we had 5.250 pounds, but we would round the amount off and indicate that we had five pounds.

In dealing with many of the math problems in this book, *it is not necessary to keep all the numbers that result from a calculation.*

Example:

$$\begin{array}{r} 2.54 \\ \times\ \underline{2.3} \\ 762 \\ \underline{508\ } \\ 5.842 \end{array}$$

Do we need the accuracy called for in the answer above?

That depends on *what our tolerance is.*

If tolerance is permitted (i.e., we do not need that great an accuracy), we should learn to round off the numbers as much as possible.

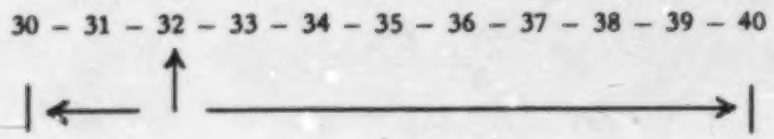
Since we may have a different tolerance for each substance we are working with, we must know the tolerance before we can decide how far to round off. Shall it be

5.842 ? or 5.84 ? or 5.8 ? or 6 ?

We will assume for the following problems that you *know the tolerance.* We shall only be concerned with *how* to round off numbers.

Rule 1: To round off any number to a specific place, observe the digit to the *right* of the digit in that place. If it is *less than 5,* leave the digit in the desired place exactly as it is and replace all digits to the right of it with zeros. (If you are working to the right of a decimal point, do not replace the digits with zeros, but simply drop them.)

Example: To round off 32 to the nearest group of tens: The digit in the tens place is 3. The digit *to the right of it* is 2, which is *less than 5.* Therefore we leave the 3 as it is and replace the 2 with a zero. The rounded-off number is therefore 30.



As you can see from the chart shown here, the 32 is closer to 30 than it is to 40.

Rule 2: If the digit to the right of the desired place is *5 or greater than 5*, increase the digit in the desired place to the *next higher* digit and replace all following digits to the right of it with zero. (If you are working to the right of a decimal point, drop the digits rather than replacing them with zeros.)

Example: To round off 5.842 pounds to the nearest pound: The 8 in the tenths column is *greater than 5*; therefore we increase the 5 to 6. Since the digits to be dropped are to the right of the decimal point, we do not replace them with zeros. Our answer is 6 pounds.

PRE-ASSIGNMENT:

Answer

1. Round off to the nearest ten: 81 ________
2. Round off to the nearest ten: 17 ________
3. Round off to the nearest ten: 85 ________
4. Round off to the nearest thousand: 12,847 ________
5. Round off to the nearest pound: 10.2 pounds ________
6. Round off the nearest quart: 5.75 quarts ________
7. Round off to the nearest hundred: 298 ________
8. Round off to the nearest cent: $10.675 ________

ASSIGNMENT

A. Round off the following to the nearest ten:

1. 39 ________
2. 25 ________
3. 40 ________
4. 136 ________
5. 451 ________
6. 52 ________
7. 683 ________
8. 88 ________
9. 109 ________
10. 498 ________

B. Round off to the nearest hundred:

1. 135 ____________
2. 647 ____________
3. 276 ____________
4. 355 ____________
5. 2975 ____________
6. 1,480 ____________
7. 32,049 ____________
8. 133.9 ____________
9. 248.2 ____________
10. 992.7 ____________

C. Round off to the nearest cent:

1. $.267 ____________
2. $.594 ____________
3. $1.316 ____________
4. $5.8682 ____________
5. $24.6754 ____________
6. $.643 ____________
7. $6.572 ____________
8. $.834 ____________
9. $14.9615 ____________
10. $30.2137 ____________
11. $.62½ ____________
12. $1.57¼ ____________
13. $.28½ ____________
14. $39.78¼ ____________

D. Round off to the nearest tenth:

1. .25 ____________
2. .87 ____________
3. .984 ____________
4. 4.16 ____________
5. 5.205 ____________
6. .14 ____________
7. .32 ____________
8. 1.83 ____________
9. 3.718 ____________
10. 2.39 ____________

E. Round off to the nearest hundredth:

1. .517 ____________
2. .308 ____________
3. 5.845 ____________
4. 9.3794 ____________
5. 15.2963 ____________
6. .320 ____________
7. .934 ____________
8. 6.544 ____________
9. 8.3025 ____________
10. 14.9962 ____________

F. Round off to the nearest whole number:

1. 6.3 ____________
2. 19.4 ____________
3. 2.09 ____________
4. 34.28 ____________
5. 868.126 ____________
6. 9.6 ____________
7. 68.5 ____________
8. 100.81 ____________
9. 25.989 ____________
10. 399.704 ____________

Lesson 9 **Standard Package Sizes**

Objective: At the end of this lesson you should have some idea of size number and the quantity of food in the different size containers.

Related Information:

Can and jar sizes go by numbers, as follows:

Container Size	Capacity	Approximate Weight of Contents	Uses
8-ounce can or jar	1 cup	8 ounces	Called 8-oz or buffet size. Used for fruits, vegetables, and specialties.
Picnic can	1¼ c	10½ to 12 ounces	Used for condensed soups, some fruits, vegetables, meat and fish products, and specialties.
12-ounce can	1½ c	12 ounces	Used largely for vacuum-packed corn.
No. 300 can	1¾ c	14 to 16 oz	Commonly called the "1-pound" can. Pork and beans, baked beans, meat products, specialties.
No. 303 can, jar	2 c	16 to 17 oz	Often called the 16- or 17-oz can or jar. Fruits, vegetables, meats, ready-to-serve soups, and specialties.
No. 2 can	2½ c (20 fl. oz)	20 oz	Juices, ready-to-serve soups, pineapple, apple slices, some specialties.
No. 2½ can, jar	3½ c	27 to 29 oz	Fruits, some vegetables (pumpkin, sauerkraut, spinach and other greens, tomatoes).
No. 5 can	1 qt	2 to 3 lbs	Fruit juices, chopped clams, and soups.
46-ounce can	5¾ c (46 fl. oz)	51 oz	Fruit and fruit juices, whole chicken, pork and beans, condensed soup.
No. 10 can	3 qts	6½ to 7¼ lbs	Restaurant and institutional size. Fruits, vegetables, entrees.

Additional information: No. 2 can comes 24 to the case.
No. 2½ can comes 24 to the case.
No. 5 can comes 12 to the case.
No. 10 can comes 6 to the case.

ASSIGNMENT:

1. What is the most commonly used can size in restaurants and institutions? __________
2. What can size is approximately half the size of the No. 10? __________
3. How many No. 10 cans are there in a case? __________
4. How many cups are in a No. 10 can? __________
5. What is the difference in number of cups between No. 303 can and a No. 2 can?

   ____

6. What sizes of cans are commonly used for fruit juices? __________
7. Sauerkraut often comes packed in __________ can size.
8. Does the No. 2½ can contain 2½ cups? __________ If not, how many cups? ______
9. How many No. 2 cans are usually packed in a case? __________
10. You need 12 ounces of corn; what size can would you select? __________

Lesson 10 **Portion Control**

Objective: You will learn how to use a portion-control chart.

Related Information:

Determining what to charge a customer and doing it accurately enough to make certain of a profit is not difficult, but it does require the gathering of certain facts.

In order to set prices. the restaurant owner uses *standard recipes.* This gives control over the type of materials and the quantities going into any one serving.

It is one thing to prepare a large batch of soup, but if we use the wrong size bowl to serve it, we may wind up *short* as a result of serving too much, or *over* if we use too small a container. To prevent this, *portion control* must be exercised.

Portion control means giving out of food in quantities that are accurate, or *controlled.*

By having small containers (paper or plastic cups) prepared ahead of time with juice, syrup, catsup, mustard, etc. time is saved on the food-serving line, and less waste results.

The following chart and exercise will give you some practice in the use of charts and will also provide information necessary for determining costs:

PORTIONING CHARTS

Vegetables

(1) Product	(2) Size	(3) Yield	(4) No. of Servings	(5) Weight or Count of Portion	(6) Cup No.
Beans, lima	No. 10	72 oz.	28	2½ oz.	400
Beets, Harvard	No. 10	80 oz.	20	4 oz.	400
Carrots	No. 10	72 oz.	28	2½ oz.	400
Cauliflower, fresh	Head	2½ lb.	10	4 oz	–
Corn, creamed	No. 10	96 oz.	24	4 oz.	400
Corn, kernels	No. 10	72 oz.	24	3 oz.	400
Peas	No. 10	72 oz.	24	3 oz.	400

Fruit Desserts

(1) Product	(2) Size	(3) Yield	(4) No. of Servings	(5) Weight or Count of Portion	(6) Cup No.
Apricots	No. 10	86 pc.	17	5 pc.	550
Cherries	No. 10	300 pcs.	43	7 pc.	550
Peach halves	No. 10	38 pc.	19	2 pc.	550
Plum halves	No. 10	38 pc.	13	3 pc.	550
Peaches, sliced	No. 10	106 oz.	21	5 oz.	550
Prunes, stewed	No. 10	112 oz.	28	6 pc.	550
Strawberries, fresh	Qt.	20 oz.	7	3 oz.	550

Reading the Chart:

1. Column 1 gives the name of the product.
2. Column 2 indicates the probable size of the can that you will have on the shelf.
3. Column 3 indicates the weight of the particular item.
4. Column 4 indicates the number of servings from a can or container.
5. Column 5 indicates the amount in each serving – weight or number of pieces.
6. Column 6 indicates the size of paper container suggested for that product.

Example:

Peaches, sliced	No. 10	106 oz.	21	5 oz.	550

Note: Peach halves are easy to measure, but slices are not. Therefore for peach halves we might call for two, but for slices, weight or capacity must be used.

1. What size container do the peaches usually come in? #10
2. What is the usual weight of the contents of the can? 106 oz
3. How many servings can you get from one can, assuming 5 oz. per serving? 21
4. What size paper cup is suggested? #550

There is a standard code system adopted by the paper-container industry.

A No. 400 cup holds 4 fluid ounces of liquid.
A No. 550 cup holds 5½ fluid ounces of liquid.
A No. 100 cup holds 1 fluid ounce of liquid.
A No. 075 cup holds ¾ fluid ounce of liquid.
A No. 050 cup holds ½ fluid ounce of liquid.

5. How many fluid ounces of peach slices would be a serving? 5½

ASSIGNMENT A:

1. How many servings of peach halves can we get from a No. 10 can? ____________
2. How many peach halves go into a standard portion of peaches? ____________
3. Strawberries are usually purchased by the ____________
4. What size cup would you use for stewed prunes? ____________
5. How many apricots (canned) are in a standard portion? ____________
6. How many servings can be made from a No. 10 can of corn kernels? ____________
7. How many ounces of canned peas equals a standard portion? ____________
8. What size cup would you use for canned Harvard beets? ____________
9. How many ounces of carrots to a standard serving? ____________
10. How many servings can we get from a 2½-lb head of cauliflower? ____________

How would we figure out the cost per serving of peach halves?

1. Looking on the chart, we find we use 2 peach halves to a standard portion.
2. We find that there are 19 servings in a number 10 can.
3. We look up the price of the No. 10 can of peaches......... Let's say our chart shows 6 No. 10 cans of peaches (a case) cost $10.74.

$6\overline{)10.74}$ = $ 1.79 per # 10 can

4. How much does each serving cost?

19 servings in a # 10 can

$19\overline{)1.79}$ = $ .094

$ .09 per serving (rounded off)

ASSIGNMENT B:

Find the cost of an individual serving of:

1. Creamed corn. Cost per case of #10 cans is $6.38.

2. Apricots. Cost per case of #10 cans is $11.44.

3. Fresh strawberries. Cost per quart is $ .89.

Objective: You will gain skill in working with denominate numbers.

Related Information:

The numbers we have been working with in the previous lessons involve some type of measurement, such as ounces, pounds, minutes, and degrees, to name a few. Numbers like 7 feet, 6 pounds, 20 minutes, etc., are called *denominate* numbers because they stand for specific measurements. They have "names." "Abstract" or "pure" numbers have no description after them.

6 *feet* .... a denominate number
6 .... a pure number

In the foods trade, when we must multiply or divide numbers, we find both types in the same problem. For example, as in the previous lesson, suppose we wanted to figure out how many 4-ounce portions we could get out of 2 pounds of fruit salad. Two pounds can be changed to 32 ounces. We divide a denominate number by a denominate number: –

$$\frac{32 \text{ ounces}}{4 \text{ ounces}} = 8$$

Here 8 is a pure number. It is just a count of 8 items. In this case we will call it 8 portions, but it is really just a plain number.

Suppose we want to double a recipe. We multiply the amount of each ingredient by 2. By 2 *what?* By the *number 2,* that's what.

3 cups of sugar × 2

We multiply a denominate number, *3 cups,* by the pure number 2, and we end up with the denominate number *6 cups.*

In doing measurement problems, you will often have to change from a small unit to a larger unit.

How many inches in 1½ feet?

Analysis: An inch is a small unit; a foot is a larger unit.

We must change from feet (larger) to inches (smaller).

There are 12" to the foot (" is the symbol for inch)
(' is the symbol for foot)

RULE: To change from a larger unit to a smaller unit, *multiply.*

$$12'' \times 1\frac{1}{2} = 12 \times \frac{3}{2} = \frac{36}{2} = 18 \text{ inches}$$

To change from a small unit to a large unit:

Change 40" to feet.

Analysis: An inch is a small unit; a foot a larger unit,

There are 12" to the foot.

RULE: To change from a smaller unit to a larger unit, *divide.*

$$\begin{array}{r} 3 \\ 12\overline{)\,40} \\ \underline{36} \\ 4/12 \end{array}$$

4/12 (or 4") Answer: 3 ft. 4 in.

When changing recipe quantities very often we must change from larger to smaller units or vice-versa.

PRE–ASSIGNMENT A:

1. 20 in = ___ ft ____ in
2. 2½ gal = ___ qt
3. 48 oz = ___ lb

ASSIGNMENT A:

1. 21 oz = ___ lb ___ oz
2. 5 pt = ____ qt ____ pt
3. 4 ft = ____ yd
4. 22 in = ____ ft ____ in
5. 4 hr 20 min = ____ min
6. 1½ gal = ____ qts
7. 3 qt = ____ pts
8. 10 pts = ____ qts
9. 9 articles = ____ doz
10. 6 qt = ____ gal
11. 2½ lb = ____ oz
12 1½ gross = ____ doz
13. 12 fl oz = ____ c
14. 3 lb = ____ oz
15. 3 T = ____ t
16. 36 fl oz = ____ c
17. 100 min = ____ hr ____ min
18. 3½ doz = ____ pieces
19. 9 pt = ____ qt
20. 15 T = ____ oz

Adding Denominate Numbers:

When adding, subtracting or multiplying denominate numbers it is usually the practice to put the answer in the simplest form as, for example

11 ft 16 in should be changed to: 12 ft 4 in

PRE-ASSIGNMENT B:

Add these units and simplify.

1. $\begin{array}{ll} 1\text{ ft} & 7\text{ in} \\ 4\text{ ft} & 8\text{ in} \\ \hline \end{array}$

ASSIGNMENT B:

1. $\begin{array}{ll} 5\text{ yd} & 2\text{ ft.} \\ 2\text{ yd} & 2\text{ ft} \\ \hline \end{array}$

2. $\begin{array}{ll} 3\text{ gal} & 2\text{ qt} \\ 2\text{ gal} & 3\text{ qt} \\ \hline \end{array}$

3. $\begin{array}{ll} 5\text{ hr.} & 30\text{ min} \\ 2\text{ hr.} & 45\text{ min} \\ \hline \end{array}$

4. $\begin{array}{ll} 6\text{ lb} & 9\text{ oz} \\ 5\text{ lb} & 8\text{ oz} \\ \hline \end{array}$

5. $\begin{array}{ll} 2\text{ qt} & 1\text{ pt} \\ 3\text{ qt} & 1\text{ pt} \\ \hline \end{array}$

6. $\begin{array}{ll} 2\text{ hr} & 40\text{ min} \\ 1\text{ hr} & 20\text{ min} \\ \hline \end{array}$

7. $\begin{array}{ll} 6\text{ gal} & 2\text{ qt} \\ 1\text{ gal} & 3\text{ qt} \\ \hline \end{array}$

8. $\begin{array}{ll} 12\text{ lb} & 8\text{ oz} \\ 4\text{ lb} & 9\text{ oz} \\ \hline \end{array}$

9. $\begin{array}{ll} 2\text{ qt.} & 1\text{ pt} \\ 3\text{ qt} & 1\text{ pt} \\ 2\text{ qt} & 1\text{ pt} \\ \hline \end{array}$

10. $\begin{array}{ll} 7\text{ hr} & 48\text{ min} \\ 9\text{ hr} & 32\text{ min} \\ \hline \end{array}$

Subtracting Denominate Numbers:

In subtracting denominate numbers, we sometimes have to subtract a large number from a smaller one. In such a case we need to *borrow*, as this example shows:

$$\text{Subtract:}\quad \begin{array}{rl} 6\text{ feet} & 2\text{ inches} \\ -\,4\text{ feet} & 6\text{ inches} \\ \hline \end{array}$$

We cannot subtract 6 inches from 2 inches, so we borrow *one of the 6 feet,* call it *12 inches,* and *add it to the 2 inches,* making 14.

$$\begin{array}{rll} \overset{5}{\cancel{6}}\text{ feet} & \overset{14}{\cancel{2}}\text{ inches} & \\ -\,4\text{ feet} & 6\text{ inches} & \\ \hline 1\text{ foot} & 8\text{ inches} & \text{Answer} \end{array}$$

ASSIGNMENT C:

1. 12 lbs 4 oz
   − 6 lbs 2 oz

2. 18 lbs 9 oz
   −11 lbs 4 oz

3. 21 lbs 10 oz
   − 7 lbs 10 oz

4. 13 lbs 1 oz
   − 5 lbs 3 oz

5. 6 qts 2 pts
   − 2 qts

6. 18 qts
   − 7 qts 1 pt

7. 5 gal 3 qts
   −1 gal 2 qts

8. 9 gal 1 qt
   −2 gal 3 qts

9. 6 yds
   −1 yd 1 ft

10. 18 yds
    − 7 yds 2 ft

11. 5 ft. 9 in
    −1 ft 7 in

12. 14 ft 10 inches
    − 5 ft 11 inches

13. 4 hrs 30 min
    −2 hrs 15 min

14. 17 hrs 45 min
    − 6 hrs 50 min

15. 12 hrs 7 min
    − 4 hrs 22 min

Multiplication of Denominate Numbers

PRE–ASSIGNMENT D:

Multiply and reduce to simplest form.

1. 2 ft. 7 in
   × 5

ASSIGNMENT D:

Multiply and reduce to simplest form.

1. 3 qt 1 pt
   × 4

2. 1 hr 30 min
   × 7

Ans.__________ __________

3. 5 gal 2 qt
   ×3

4. 5 lb 9 oz
   ×4

__________ __________

5. 1 qt. 1 pt
× 2
______

______

6. 3 lb 8 oz
× 5
______

______

7. 12 gal 3 qt
× 4
______

______

8. 2 hr 16 min
× 6
______

______

UNIT II – FRACTIONS

Lesson 1 **What Fractions Mean**

Objective: You will review the meaning of fractions.

Related Information:

Fractions are frequently used in our daily affairs. In the store we may buy a quarter-pound of cheese, ½ dozen eggs, or 2½ pounds of vegetables. We are familiar with the expression "one-half off" when referring to sale merchandise.

A *fraction* is something that is *less than a whole thing.*

½ lb of rice is less than a whole pound.

¼ pound of cheese is less than a whole pound of cheese.

¾ yard of material is less than a whole yard of material.

A fraction is composed of two parts.

a. The number *below the line* (or to the right of the line) shows how many parts the whole thing has been divided into.

   The number below the line is called the *denominator.*

   In the fraction ½, the number below the line is 2.

   It means the whole thing has been divided into two equal parts.

   In the fraction 1/12, the 12 means the whole thing has been divided into 12 equal parts.

   Example: A dozen eggs can be considered one whole thing, divided into 12 separate eggs.

b. The number *above the line* (or to the left of the line) in a fraction shows how many of those parts have been taken or used.

   The number above the line is called the *numerator.*

   1/2 You want 1 out of the 2 parts .
   1/12 You want 1 out of the 12 parts.

   You want 1/4 lb: the whole pound is considered to be divided into four equal parts, and you want 1 of them.

   You want 3/4 lb: The whole pound is divided into four equal parts and you want 3 of them.

Again: The denominator tells how many equal parts the whole has been divided into.

The numerator tells how many of the parts you are talking about.

What you do with the numerator depends on the problem.

Additional example:

The fraction 1/8 is less than 3/8.
In 1/8 you are talking about only 1 part out of 8.
In 3/8 you are talking about 3 parts out of 8.

ASSIGNMENT:

1. We can divide a pound into *two* halves (1/2) + (1/2).
   The denominator tells us how many parts we are dividing the item into.

   Into how many thirds can you divide a pie? ________

   Into how many quarters can you divide a pound of butter? ________

   Into how many eighths can you divide something? ________

   Into how many twelfths can you divide something? ________

2. In the fraction 2/3, we mean *two* out of *three* parts
   What do we mean when we see:

   1/3 ____________________ 5/8 ____________________
   1/5 ____________________ 5/12 ____________________
   4/5 ____________________ 7/8 ____________________

3. Name the denominator in the following fractions:

   5/16 ________ 7/64 ________ 9/16 ________
   1/32 ________ 3/8 ________ 1/12 ________

4. Name the numerators:

   5/16 ________ 7/64 ________ 9/16 ________
   1/32 ________ 3/8 ________ 1/12 ________

5. Take a nickel out of your pocket and draw eight circles.
   Shade the portion indicated by the following fractions:

   1/2, 1/4, 1/8, 3/8, 3/4, 7/8, 3/16, 5/16

6. Write the following expressions as fractions:

One egg out of a dozen ________
Six eggs out of a dozen ________
One quarter out of a dollar ________
One cent out of a dollar ________
Three minutes out of one hour ________
Three ounces out of one pound ________
One quart out of a gallon ________
One cup out of a pint ________
Three cans out of a case of twelve cans ________
Thirty cents out of a dollar ________

7. Put the following groups of fractions in proper order, from smallest to largest:

a. 3/4, 1/4 ____________________
b. 7/8, 3/8, 1/8, 5/8, ____________________
c. 5/16, 3/16, 7/16, 9/16 ____________________

Objective: You will learn the different types of fractions.

Related Information:

There are *three* different types of fractions:

The proper fraction (common).

Example: $\frac{1}{4}$ In the proper fraction the numerator is smaller than the denominator.

The proper fraction is always less than one whole thing.

The improper fraction.

Example: $\frac{4}{3}$ In the improper fraction the numerator is generally larger than the denominator.

Example: $\frac{4}{4}$ Sometimes the numerator is equal to the denominator.

The value of an improper fraction can be 1 or more than 1.

The mixed number.

Example: $2\frac{1}{4}$ The mixed number contains a whole number (2) plus a proper fraction (1/4).

When giving the answer to a problem, an improper fraction is usually changed to a mixed number.

A mixed number is often changed into an improper fraction to make the solving of certain fraction problems easier.

How to change an improper fraction to a whole number or mixed number:

$\frac{8}{4}$ Divide the denominator into the numerator:

4 into 8 = 2 (Answer)

$\frac{8}{7}$ Divide 7 into 8 = $1\frac{1}{7}$ (Answer)

How to change mixed numbers into improper fractions:

$1\frac{3}{4}$ Multiply the 1 times the 4 (whole number × denominator) (=4); then add the numerator (3) = 7

Place the 7 over the denominator of the fraction part: $\frac{7}{4}$ (Ans.)

Example: $5\frac{3}{8}$ $5 \times 8 = 40 + 3 = 43$, over $8 = \frac{43}{8}$

Just as a check, change the 43/8 back to a mixed number:

$$\frac{43}{8} = \begin{array}{r} 5 \\ 8\overline{)\,43} \\ \underline{40} \\ 3 \end{array} = 5\frac{3}{8}$$ (Back to where we started.)

ASSIGNMENT:

1. Tell which of the following are proper fractions, improper fractions, and mixed numbers.

   a. $3\frac{1}{3}$ ________________
   b. $\frac{1}{12}$ ________________
   c. $\frac{3}{2}$ ________________
   d. $\frac{5}{6}$ ________________
   e. $7\frac{1}{8}$ ________________
   f. $\frac{5}{2}$ ________________
   g. $4\frac{1}{7}$ ________________
   h. $\frac{3}{10}$ ________________

2. Change the following mixed numbers to improper fractions:

   a. $1\frac{1}{2}$
   b. $1\frac{1}{3}$
   c. $5\frac{3}{4}$
   d. $7\frac{1}{5}$
   e. $12\frac{3}{8}$
   f. $5\frac{5}{16}$
   g. $8\frac{7}{8}$
   h. $4\frac{2}{3}$

3. Change the following improper fractions to mixed numbers

   a. $\frac{8}{3}$
   b. $\frac{24}{9}$
   c. $\frac{33}{4}$
   d. $\frac{41}{10}$
   e. $\frac{23}{4}$
   f. $\frac{21}{2}$
   g. $\frac{35}{4}$
   h. $\frac{19}{8}$
   i. $\frac{72}{16}$
   j. $\frac{25}{5}$

4. How many pies do I need for 7 quarters?

5. Change the following to improper fractions:

   a. $2\frac{1}{2}$
   b. $5\frac{1}{4}$
   c. $5\frac{3}{8}$
   d. $6\frac{3}{10}$
   e. $2\frac{3}{4}$
   f. $4\frac{1}{8}$
   g. $6\frac{3}{5}$
   h. $2\frac{3}{16}$
   i. $3\frac{1}{4}$
   j. $6\frac{1}{2}$
   k. $7\frac{3}{4}$
   l. $9\frac{2}{3}$
   m. $2\frac{3}{8}$
   n. $7\frac{1}{3}$
   o. $3\frac{5}{16}$
   p. $10\frac{3}{8}$

6. Change to a mixed number or whole number:

   a. $\frac{14}{3}$
   b. $\frac{33}{4}$
   c. $\frac{18}{12}$
   d. $\frac{7}{4}$
   e. $\frac{17}{6}$
   f. $\frac{20}{10}$
   g. $\frac{18}{5}$
   h. $\frac{27}{12}$
   i. $\frac{32}{4}$
   j. $\frac{25}{6}$
   k. $\frac{28}{3}$
   l. $\frac{46}{8}$
   m. $\frac{85}{10}$
   n. $\frac{48}{16}$
   o. $\frac{1000}{2}$
   p. $\frac{202}{5}$

UNIT II – FRACTIONS

Lesson 3 Reducing Fractions to Lowest Terms

Objective: You will be able to reduce fractions to lowest terms.

Related Information:

It is common practice to reduce fractions to lowest terms and use them in that form. If we need 8 ounces of flour, we would ask for 1/2 pound, not 8/16 of a pound. If something took 30 minutes, we would say 1/2 hour rather than 30/60 of an hour.

When we reduce fractions to lowest terms, *we do not in any way change the value of the fraction.* The fraction 2/4 has the same value as the fraction 1/2.

Fractions that look different but have the same value are called *equivalent* fractions. When finding answers to problems, unless otherwise stated you must reduce answers to fractions in their lowest terms.

Some students have trouble reducing fractions to lowest terms. Below are a few different procedures which may help you.

Procedure 1:

Reduce $\frac{4}{8}$ to lowest terms.

Look for a number that will divide evenly into both the numerator and the denominator. In some fractions, like the 4/8 above, *the numerator itself* will work as the divisor.

4 ← divided by 4 = 1
8 ← divided by 4 = 2   Answer is $\frac{1}{2}$

Procedure 2:

Reduce $\frac{6}{9}$ to lowest terms.

If the numerator will not divide evenly into the denominator, look for *a smaller number* that will divide evenly into both the numerator and the denominator.

In this case the numerator 6 will not divide evenly into the denominator. We then look for a divisor that will divide evenly into both numerator and denominator. Try the small numbers like 2, 3, 4, 5, 6, etc.

In this case, 2 does not work, because it will not divide evenly into 9. Try 3 next. Good – 3 will go evenly into both.

6 ← divided by 3 = 2
9 ← divided by 3 = 3   Answer is $\frac{2}{3}$

Procedure 3:

Reduce $\frac{100}{1000}$

In cases where there are zeros ending both the numerator and denominator, we can divide by 10 or 100, depending on the fraction. A shortcut is to cross out the zeros. *You can cross out an ending zero in the numerator for every such zero in the denominator.* This is the same as dividing by ten.

$$\frac{1\cancel{00}}{10\cancel{00}} = \frac{1}{10}$$

Procedure 4:

Reduce $\frac{26}{39}$

In the problem above, many students will decide that the fraction is in its lowest terms and cannot be reduced. It is true that there are many fractions that cannot be reduced. Examples are:

$\frac{5}{9}$, $\frac{17}{23}$, $\frac{6}{11}$, $\frac{7}{19}$, etc.

However, before making the statement that a fraction cannot be reduced, try procedure 4. Divide the numerator by a low number such as 2 or 3. *This may provide you with a divisor* that will divide evenly into both numerator and denominator.

$\frac{26}{39}$ ← divided by 2 = 13

$\frac{26}{39}$ ← divided by 13 = 2 ← divided by 13 = 3 **Answer** $\frac{2}{3}$

Summary: Reduce fractions to lowest terms where possible. Use whatever procedure is easiest for you. Two or more steps may be necessary in some cases.

ASSIGNMENT:

1. Reduce the following fractions to lowest terms:

   a. $\frac{2}{6}$
   b. $\frac{5}{10}$
   c. $\frac{9}{18}$
   d. $\frac{9}{36}$
   e. $\frac{4}{12}$
   f. $\frac{3}{27}$
   g. $\frac{24}{48}$
   h. $\frac{25}{125}$
   i. $\frac{60}{360}$

2. Reduce the following fractions to lowest terms:

   a. $\frac{15}{20}$
   b. $\frac{9}{12}$
   c. $\frac{25}{35}$
   d. $\frac{10}{50}$
   e. $\frac{16}{32}$
   f. $\frac{12}{16}$
   g. $\frac{45}{60}$
   h. $\frac{10}{25}$
   i. $\frac{4}{16}$

3. Reduce those fractions which are not in lowest terms:

a. $\frac{9}{10}$
b. $\frac{15}{21}$
c. $\frac{16}{21}$
d. $\frac{18}{81}$
e. $\frac{21}{25}$
f. $\frac{63}{72}$
g. $\frac{27}{54}$
h. $\frac{9}{15}$
i. $\frac{5}{16}$

4. Reduce the following fractions to lowest terms:

a. $\frac{30}{100}$
b. $\frac{75}{100}$
c. $\frac{125}{1000}$
d. $\frac{15}{100}$
e. $\frac{125}{250}$
f. $\frac{150}{350}$
g. $\frac{1000}{2000}$
h. $\frac{190}{380}$
i. $\frac{4500}{10000}$

5. Reduce the following fractions to lowest terms:

6/12 of a dozen equals ______ dozen

4/16 pound of flour equals ______ pound

12/16 pound equals ______ pound

15/16 pound equals ______ pound

6. Making your own fractions:

The denominator represents the number of equal parts the whole has been divided into.

Example: A pie has been cut into 8 parts or slices.
Make the denominator 8.
The whole pie = 8/8
If you gave away 1 piece, you would give away 1/8.
You would have 7 pieces left, or 7/8.

In the problems below, after setting up each fraction, reduce it to lowest terms if possible.

a. Three eggs out of a dozen ______
b. Eight ounces out of a pound ______
c. One spoon out of a dozen ______
d. Eight cups out of two dozen cups ______
e. Two parts out of a melon cut into four parts ______
f. One teaspoon out of a tablespoon ______
g. One cup out of a quart ______
h. Three quarts out of a gallon ______
i. Seven inches out of a foot ______
j. One No. 10 can out of a case of 6 ______
k. Five portions out of a No. 10 can containing 25 portions ______
l. Three servings out of 25 servings prepared ______

UNIT II – FRACTIONS

Lesson 4 — Raising Fractions to Higher Terms

Objective: You will be able to raise fractions to higher terms.

Related Information:

In the previous lesson we practiced reducing fractions to lowest terms. We indicated that answers are usually given in lowest terms. But it is sometimes necessary to raise fractions to higher terms in order to do certain types of fraction problems. *This will not change the value of the fraction.*

Procedure: $\frac{1}{2}$ is to be changed to a fraction with a denominator of 10.

$\frac{1}{2} = \frac{?}{10}$ Divide 2 into 10 to find the multiplier.

$\begin{array}{r} 5 \\ 2\overline{)10} \end{array}$ 5 is the multiplier.

$\frac{1}{2} \times \frac{5}{5} \Rightarrow \frac{5}{10}$ Multiply both numerator and denominator by this number.

ASSIGNMENT:

1. Change the following fractions to equivalent fractions having the indicated denominators.

    a. $\frac{1}{4}$ to 8ths
    b. $\frac{1}{3}$ to 9ths
    c. $\frac{1}{4}$ to 16ths
    d. $\frac{5}{8}$ to 16ths
    e. $\frac{1}{2}$ to 10ths
    f. $\frac{4}{5}$ to 20ths
    g. $\frac{3}{8}$ to 24ths
    h. $\frac{1}{16}$ to 32nds
    i. $\frac{1}{10}$ to 100ths

2. Change the following fractions to equivalent fractions having denominators as indicated:

    a. $\frac{1}{2} = \frac{\_\_}{16}$
    b. $\frac{2}{5} = \frac{\_\_}{10}$
    c. $\frac{7}{8} = \frac{\_\_}{32}$
    d. $\frac{7}{10} = \frac{\_\_}{100}$
    e. $\frac{5}{7} = \frac{\_\_}{21}$
    f. $\frac{2}{3} = \frac{\_\_}{12}$
    g. $\frac{3}{4} = \frac{\_\_}{12}$
    h. $\frac{1}{5} = \frac{\_\_}{20}$
    i. $\frac{1}{3} = \frac{\_\_}{6}$

UNIT II – FRACTIONS

Lesson 5 **Least Common Denominator**

Objective: You will learn how to find the least common denominator.

Related Information:

Fractions that have the same denominator can be added or subtracted, depending upon what the problem calls for. When fractions have the same denominator, they are said to have a *common denominator.*

If they do not have the same denominator, then in order to add or subtract them, the fractions must be changed to equivalent fractions with a common denominator.

1/8 3/8 5/8 These fractions all have the same denominator. The common denominator is 8.

1/8 1/4 These fractions do not have the same denominator.

If we needed to add 1/8 and 1/4, the denominators would have to be made the same. We must find a number that both denominators will divide into evenly. Like reducing fractions, finding a common denominator is sometimes simple, but at other times more involved. The easiest type is illustrated above.

The *smallest* number that all denominators will divide into evenly is called the *least common denominator.*

1/8 and 1/4 Try the 4. The 8 will not divide into the four...... therefore it is not acceptable

Try the 8. The 4 will divide evenly into the 8, so it can be used as the least common denominator.

The above problem can be solved by procedure 1.

Procedure 1: When all the denominators will divide evenly into one of them, that one will be the least common denominator.

To get both fractions above into equivalent fractions having a denominator of 8:

$\frac{1}{8} = \frac{1}{8}$ (No problem here)

$\frac{1}{4} = \frac{?}{8}$ (We just learned how to do this – divide the 4 into the 8, getting 2. Multiply 2 X 1.)

$\frac{1}{4} = \frac{2}{8}$

We now have two fractions, 1/8 and 2/8, which are in a form where they can be added or subtracted.

Here is another example:

$$\frac{1}{5},\quad \frac{2}{5},\quad \text{and}\quad \frac{3}{10}$$

All denominators will divide evenly into 10, so 10 is the least common denominator.

$$\frac{1}{5}=\frac{2}{10}$$
$$\frac{2}{5}=\frac{4}{10}$$
$$\frac{3}{10}=\frac{3}{10}$$

Procedure 2: When one denominator will *not* divide evenly into the other, multiply one denominator by the other. For example,

$$\frac{1}{3}\text{ and }\frac{1}{4}$$

$$3 \times 4 = 12$$

Use 12 as the least common denominator.

$$\left.\begin{aligned}\frac{1}{3}&=\frac{4}{12}\\ \frac{1}{4}&=\frac{3}{12}\end{aligned}\right\}\text{ (From the procedure you practiced in lesson 4.)}$$

We now have two fractions with the same denominator, and we can add them or subtract them.

$$\frac{4}{12}\text{ and }\frac{3}{12}$$

Procedure 3: Sometimes procedure 2 is difficult because the numbers are too large, or when there are three or more different denominators. For example,

$$\frac{3}{4}\text{ and }\frac{1}{8}\text{ and }\frac{2}{3}$$

Select the largest number. In this case it is 8.

See if the other denominators will divide evenly into this number. The 4 will, but the 3 will not. Reject the 8 and try 2 X 8 instead. 2 X 8 = 16.

Again try each denominator: 4 will divide evenly into 16.
8 obviously will.
3 will not. Reject 16.

Try 3 × 8 this time.

$3 \times 8 = 24$

4 will divide evenly into 24.
8 will obviously divide evenly into 24
3 will divide evenly into 24.

Therefore 24 can be used as the *least common denominator.*

To complete the problem: $\frac{3}{4}$ and $\frac{1}{8}$ and $\frac{2}{3}$

become $\frac{18}{24}$ and $\frac{3}{24}$ and $\frac{16}{24}$ by the procedure of lesson 4.

Note: It is not always necessary to have the *least* common denominator. The numbers 48, 72, and 96 would all have worked in this case, but the end result would require reducing. So finding the actual *least* common denominator will give you smaller numbers to work with and will save extra work in the final operations -- when adding or subtracting.

ASSIGNMENT

1. Find the least common denominator in the following problems:

a. $\frac{5}{8}$ and $\frac{2}{3}$ _____ b. $\frac{1}{2}$ and $\frac{5}{6}$ _____ c. $\frac{1}{8}$ and $\frac{5}{16}$ _____

d. $\frac{1}{4}$ and $\frac{1}{8}$ and $\frac{1}{2}$ _____ e. $\frac{4}{5}$ and $\frac{1}{4}$ and $\frac{2}{3}$ _____ f. $\frac{1}{3}$ and $\frac{1}{4}$ and $\frac{1}{6}$ _____

g. $\frac{1}{5}$ and $\frac{1}{3}$ and $\frac{1}{6}$ and $\frac{1}{2}$ _____ h. $\frac{1}{2}$ and $\frac{1}{3}$ and $\frac{1}{4}$ and $\frac{1}{5}$ _____

i. $\frac{9}{16}$ and $\frac{1}{4}$ and $\frac{1}{8}$ _____ j. $\frac{3}{64}$ and $\frac{5}{8}$ and $\frac{1}{4}$ _____

k. $\frac{2}{3}$ and $\frac{7}{12}$ and $\frac{7}{16}$ _____ l. $\frac{5}{6}$ and $\frac{9}{10}$ and $\frac{1}{12}$ _____

Arranging fractions in order is sometimes difficult without first changing them to the same denominator. It is very obvious then which is the smallest, next etc.

2. Arrange the following fractions in order, from smallest to largest:

a. $\frac{1}{8}$, $\frac{7}{8}$, $\frac{5}{8}$, $\frac{3}{8}$,

b. $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$

c. $\frac{1}{8}, \frac{1}{4}, \frac{1}{16}, \frac{3}{8}$

d. $\frac{5}{16}, \frac{1}{2}, \frac{3}{4}, \frac{1}{8}$

e. $\frac{5}{8}, \frac{5}{32}, \frac{5}{16}, \frac{5}{4}$

f. $\frac{1}{5}, \frac{1}{15}, \frac{1}{20}, \frac{1}{10}$

g. $\frac{2}{3}, \frac{4}{5}, \frac{3}{4}, \frac{1}{2}$

h. $3\frac{1}{10}, 3\frac{1}{4}, 3\frac{1}{3}, 3\frac{1}{8}$

3. **Which is larger, 1/3 cup or 1/4 cup?** ____________
4. **Which is larger, 2/3 cup or 3/4 cup?** ____________

UNIT II – FRACTIONS

Lesson 6 **Addition of Fractions**

Objectives: You will learn how to add fractions and mixed numbers.
You will learn how addition of fractions is used in food service.

Related Information:

Fractions that have the same (common) denominator can be added immediately.

$\frac{1}{8} + \frac{3}{8}$ Example of fractions with a common denominator.

If the fractions do not have the same denominator:

$$\frac{1}{4} + \frac{3}{8}$$

You must follow the procedures outlined in the previous lesson and change them so they do have a common denominator.

$\frac{1}{4} + \frac{3}{8}$ becomes $\frac{2}{8} + \frac{3}{8}$

Procedure: Rules for adding fractions:

They must have a common denominator. If they do not, change them so they do have a common denominator. Then *add the numerators*, using the same denominator.

$\frac{1}{8} + \frac{3}{8} = \frac{4}{8}$ Answer

Note: Fractions can be added either horizontally or vertically. It is usually easier to add mixed numbers vertically.

$2\frac{3}{8}$ Add the fractions (if they have the same denominator)

$\underline{+\ 5\frac{7}{8}}$ Add the whole numbers. Reduce answer to lowest terms.

$7\frac{10}{8} = 7 + 1\frac{2}{8} = 8\frac{2}{8} = 8\frac{1}{4}$ Answer

Notice how you are combining many of the procedures learned in the last few sections. When you reduce $\frac{10}{8}$ it becomes 1 and $\frac{2}{8}$. The 1 is added to the 7, and the $\frac{2}{8}$ is reduced to $\frac{1}{4}$.

Add: $\frac{1}{4} + \frac{2}{3} + \frac{1}{8}$ Find the least common denominator. Change each fraction as described before.

$\frac{6}{24} + \frac{16}{24} + \frac{3}{24}$ Change each fraction as described before.

$= \frac{25}{24}$ Add numerators, placing the sum over the common denominator.

$= 1\frac{1}{24}$ Answer Reduce improper fraction.

ASSIGNMENT:

(Reduce all answers to lowest terms)

1. $\begin{array}{r} 3\frac{1}{4} \\ +9\frac{3}{4} \\ \hline \end{array}$

2. $\begin{array}{r} 8\frac{3}{4} \\ +4\frac{3}{4} \\ \hline \end{array}$

3. $\begin{array}{r} 4\frac{1}{3} \\ +\frac{2}{3} \\ \hline \end{array}$

4. $\begin{array}{r} 7\frac{1}{3} \\ +\frac{1}{2} \\ \hline \end{array}$

5. $\begin{array}{r} 2\frac{1}{8} \\ 3\frac{3}{8} \\ +11\frac{6}{8} \\ \hline \end{array}$

6. $\begin{array}{r} \frac{1}{4} \\ +\frac{9}{16} \\ \hline \end{array}$

7. $\begin{array}{r} 2\frac{5}{6} \\ +7\frac{1}{12} \\ \hline \end{array}$

8. $\begin{array}{r} 10\frac{1}{4} \\ 6\frac{1}{8} \\ +22\frac{3}{8} \\ \hline \end{array}$

9. 4 1/4 + 5 1/2 + 6 5/8

10. 5 2/3 + 8 3/4

11. 1 1/2 + 5 1/16

12. 5 3/10 + 8

13. Joan worked part time as a waitress: Monday 3½ hours, Tuesday 3¼ hours, Wednesday 3¾ hours, Thursday 3¾ hours. How many hours did she work that week? ________

14. Pete worked the following hours. What was his total for the week? Sunday 8½, Monday 9, Tuesday 6½, Wednesday 8¾, Thursday 8, Friday 10¼. ______

15. Sue worked the following hours. What was her total? Wednesday 7¼, Thursday 8¼, Friday 10½, Saturday 8¼, Sunday 6¾. ______

16. The following quantities of materials were used in the kitchen. Find the total of each to the nearest whole unit.

a. Flour: $2\frac{1}{8}$ c, $4\frac{1}{4}$ c, $1\frac{3}{4}$ c, $3\frac{1}{2}$ c ______

b. Eggs: $\frac{1}{12}$doz, $2\frac{3}{12}$ doz, $2\frac{1}{3}$ doz, $3\frac{1}{6}$ doz. ______

c. Butter: $\frac{1}{4}$ lb, $2\frac{1}{8}$ lb, $3\frac{1}{16}$ lb, $1\frac{3}{4}$ lb. ______

d. Milk: $1\frac{3}{4}$ qts, $4\frac{1}{4}$ qts, $5\frac{1}{8}$ qts, $3\frac{1}{2}$ qts. ______

UNIT II – FRACTIONS

Lesson 7 **Subtraction of Fractions**

Objectives: You will learn how to subtract fractions and mixed numbers.
You will learn how subtraction of fractions can be used in food service.

Related Information:

Subtraction of fractions has similar rules to addition of fractions, namely, in order to subtract fractions the *denominators must be the same.*

If the denominators are not the same, change the fraction to an equivalent fraction containing the same common denominator.

It is advisable when subtracting fractions to place them vertically (one above the other).

A subtraction problem can be read in different ways:

Subtract $\frac{1}{5}$ from $\frac{3}{5}$

or $\frac{3}{5}$ minus $\frac{1}{5}$

or $\frac{3}{5} - \frac{1}{5}$

To complete the above problem, subtract the numerators. 1 from 3 equals 2. The answer is 2/5.

(Note that the denominator remains the same in the answer.)

Here is a different type of problem:

$\frac{7}{8} - \frac{1}{4}$ (Note that the denominators are not the same.)

Arrange vertically $\begin{array}{r} \frac{7}{8} \\ -\frac{1}{4} \\ \hline \end{array}$ Change to common denominator: $\begin{array}{r} \frac{7}{8} \\ -\frac{2}{8} \\ \hline \end{array}$

Then subtract: $\frac{5}{8}$

To subtract a fraction from a whole number:

$\begin{array}{r} 8 \\ -1\frac{5}{16} \\ \hline \end{array}$ Borrow 1 from the 8 and change it into a fraction. Since we are dealing with 16ths, the 1 becomes 16/16ths.

$7\frac{16}{16}$ Subtract the 5 from the 16, getting 11, to make the fraction part $\frac{11}{16}$.

$\begin{array}{r} -1\frac{5}{16} \\ \hline \end{array}$ Subtract the 1 from the 7, getting 6 for the whole-number part.

$6\frac{11}{16}$ Answer

Borrowing in subtraction of fractions gives many students a difficult time.

$$\begin{array}{r} 6\frac{1}{8} \\ -\ \frac{7}{8} \\ \hline \end{array}$$

When the numerator of the top fraction is smaller than the numerator of the bottom fraction (after changing both to the same denominator when necessary), then it is necessary to borrow.

You can only borrow from the whole number (6).

You borrow 1, making the 6 a 5.

Change the 1 into a fraction, using the common denominator.

$$\begin{array}{r} 5\frac{8}{8} + \frac{1}{8} \\ -\ \frac{7}{8} \\ \hline \end{array}$$

Since we are working with 8ths, change the 1 to 8/8th.

$\frac{8}{8}$ plus $\frac{1}{8}$ = $\frac{9}{8}$

$$\begin{array}{r} 5\frac{9}{8} \\ -\ \frac{7}{8} \\ \hline 5\frac{2}{8} \end{array}$$

7 from 9 = 2. Fraction part of answer is 2/8.

Whole-number part: nothing from 5 = 5.

Reduce to 5 $\frac{1}{4}$ (Answer)

Another way to look at the process of borrowing:

Since you are borrowing 1 from 6, bring the 1 over to the fraction 1/8.

Now you have 5 and 1$\frac{1}{8}$. The 1$\frac{1}{8}$ is a mixed number; therefore change it to an improper fraction. It equals $\frac{9}{8}$.

After you have the 9/8, follow the same procedure as above to subtract.

ASSIGNMENT:
(Reduce all answers to lowest terms.)

1. Subtraction with the same denominators:

   a. 3/5 – 1/5 ________

   b. 7/8 – 3/8 ________

   c. 5/7 – 2/7 ________

   d. 3/4 – 1/4 ________

   e. 15/16 – 5/16 ________

f. 5/8 − 1/8 ________

g. 7/16 − 3/16 ________

h. 4 1/8 − 2 ________

i. 12 5/16 − 4 1/16 ________

j. 8 5/12 − 3 1/12 ________

2. Subtraction with different denominators:

a. 5/8 minus 1/4 ________

b. 9/16 minus 3/8 ________

c. 3/4 minus 7/16 ________

d. 7/8 minus 1/2 ________

e. 1/2 minus 3/8 ________

f. 1 3/4 minus 5/8 ________

g. 8 6/8 minus 2 3/4 ________

h. 200 1/2 minus 45 1/8 ________

i. 24 7/8 minus 17 1/4 ________

j. 14 15/16 minus 2 3/8 ________

3. Subtraction requiring borrowing:

a. 6 3/5 −1 4/5 ________

b. 4 1/4 − 2 3/4 ________

c. 12 1/2 − 4 3/4 ________

d. 18 1/4 − 6 1/2 ________

e. 2 1/8 − 5/16 ________

f. 8 1/4 − 4 2/3 ________

g. 11 1/3 − 2 1/4 ________

h. 12 1/16 − 3 5/16 ________

i. 340 1/8 − 245 1/2 ________

j. 36 1/2 − 18 5/8 ________

Word problems:

4. Four and one quarter pounds of vegetable fat were issued by the storeroom. Two and one-eighth pounds were used. What remained at the end of the meal? ________

5. There were 2 2/3 dozen oranges in the refrigerator. The salad cook used 1 1/4 dozen. How many dozen were left? ________

6. 25 1/4 lbs. potatoes minus 10 3/4 pounds. ________

7. 7 gallons of milk minus 4 1/4 gallons. ________

8. The cafeteria used 3 #10 cans of apricots last week. Each can weighed 6 1/2 lbs. What was the total number of pounds used? ________
   If there were 5 #10 cans in the storeroom at the beginning of last week, how many pounds were left? ________

Lesson 8 **Multiplication of Fractions**

Objective: You will learn how to multiply fractions and mixed numbers.

Related Information:

In the previous two units we found that the rules for addition and subtraction of fractions were the same in that they both required *the same common denominator*. This is *not* true for multiplication of fractions. Multiplication and division of fractions are closely related. *They do not require a common denominator.*

As a worker in the foods trades, you will often have to multiply fractions. You may need to change the amounts of the ingredients in a recipe so as to get, say, half as many portions, or three-fourths as many portions, or 1½ times the number, and so on. You may need to calculate time and a half to check up on your pay. You would be surprised at how often you will need to do this.

There are different combinations involved in multiplying fractions:

a. A fraction times a fraction: $\frac{1}{2} \times \frac{1}{2}$

b. A fraction times a whole number: $\frac{1}{4} \times 10$

c. A mixed number times a fraction: $3\frac{1}{2} \times \frac{7}{8}$

d. A mixed number times a mixed number: $2\frac{3}{4} \times 1\frac{5}{8}$

Procedure:

1. Fractions are easiest to multiply in the horizontal position (as shown above)
2. Prepare mixed numbers for multiplication by *changing mixed numbers to improper fractions.*
3. Place whole numbers over 1 to put them in fraction form. This does not change their value.
4. Multiply all numerators.
5. Multiply all denominators.
6. State all answers in lowest terms.

Multiplication may be indicated by: the symbol "X"

the word "times"

the word "of"

Type A : Multiplying a fraction by a fraction.

$$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4} \ \begin{matrix} \leftarrow\leftarrow (1 \times 1 = 1) \\ \leftarrow\leftarrow (2 \times 2 = 4) \end{matrix}$$

$$\frac{3}{8} \times \frac{1}{4} = \frac{3}{32} \ \begin{matrix} \leftarrow\leftarrow (3 \times 1 = 3) \\ \leftarrow\leftarrow (8 \times 4 = 32) \end{matrix}$$

Type B: Multiplying a whole number by a fraction.

$\frac{1}{4} \times 10$ Place the 10 over 1: $\frac{1}{4} \times \frac{10}{1}$

$$\frac{1}{4} \times \frac{10}{1} = \frac{10}{4} \ \begin{matrix} \leftarrow\leftarrow (1 \times 10 = 10) \text{ Multiplying numerators} \\ \leftarrow\leftarrow (4 \times 1 = 4\ ) \text{ Multiplying denominators} \end{matrix}$$

$\frac{10}{4}$ is an improper fraction. Reduce it to lowest terms.

$= 2\frac{2}{4}$ which is further reduced to

$= 2\frac{1}{2}$

Type C: A mixed number times a fraction.

$3\frac{1}{2} \times \frac{7}{8}$ Change mixed number to improper fraction.

$$\frac{7}{2} \times \frac{7}{8} = \frac{49}{16} \ \begin{matrix} \leftarrow\leftarrow (7 \times 7 = 49) \\ \leftarrow\leftarrow (2 \times 8 = 16) \end{matrix}$$

$$= 3\frac{1}{16}$$

Type D : A mixed number times a mixed number.

$2\frac{3}{4} \times 1\frac{5}{8}$ Change all mixed numbers to improper fractions.

$$\frac{11}{4} \times \frac{13}{8} = \frac{143}{32} \ \begin{matrix} \leftarrow\leftarrow (11 \times 13 = 143) \\ \leftarrow\leftarrow (4 \times 8 = 32) \end{matrix}$$

$$= 4\frac{15}{32}$$

Note: When you multiply *any number* by a proper fraction, you will *always* end up with a *smaller number* than you started with! If you don't, then you have surely made an error. Go back over the problems above (types A, B, and C) and check this for yourself. Can you explain why this is so?

Additional information on procedure:

a. You can multiply more than two fractions at a time.

$$\frac{1}{2} \times \frac{3}{5} \times \frac{2}{3} = \frac{6}{30} \ \begin{matrix} \leftarrow\leftarrow (1 \times 3 = 3,\ 3 \times 2 = 6) \\ \leftarrow\leftarrow (2 \times 5 = 10,\ 3 \times 10 = 30) \end{matrix}$$

$\frac{6}{30} = \frac{1}{5}$ (Reduce to lowest terms.)

b. Similarly, you can multiply two or more mixed or whole numbers or different combinations of them.

c. You can *cancel* to save time and make the multiplication easier.

You do not have to cancel. If you do not cancel, your answer will come out the same, but you will do a lot more work.

$\frac{10}{33} \times \frac{9}{25}$

Where the numbers in numerator and denominator have common factors, you can cancel them. (A factor of a number is a smaller number that will divide into the larger number evenly.)

In the above example, 10 in the numerator and 25 in the denominator have a common factor – 5. That is, 5 will divide evenly into both 10 and 25.

$\frac{\overset{2}{\cancel{10}}}{33} \times \frac{9}{\underset{5}{\cancel{25}}}$

There is another common factor:
3 will divide evenly into 33 and 9.

$$\frac{\overset{2}{\cancel{10}}}{\underset{11}{\cancel{33}}} \times \frac{\overset{3}{\cancel{9}}}{\underset{5}{\cancel{25}}} = \frac{6}{55} \begin{array}{l} \leftarrow\leftarrow (2 \times 3 = 6) \\ \leftarrow\leftarrow (11 \times 5 = 55) \end{array}$$

You can also cancel where you have three or more fractions. Still follow the rule of dividing by a common factor in numerator and denominator. The original number can be canceled once, and the new amount canceled a second time. The problem gets shorter and easier with each cancellation.

ASSIGNMENT, Part A:

1. $\frac{9}{10} \times \frac{3}{4}$
2. $\frac{1}{5} \times \frac{1}{3}$
3. $\frac{3}{4} \times \frac{5}{8}$
4. $\frac{3}{4} \times \frac{8}{9}$
5. $\frac{1}{2} \times \frac{8}{15} \times \frac{5}{6}$
6. $7 \times \frac{1}{2}$
7. $48 \times \frac{3}{16}$
8. $6 \times \frac{5}{12}$
9. $8\frac{1}{3} \times \frac{3}{5}$
10. $2\frac{2}{5} \times 4\frac{2}{3}$
11. $1\frac{3}{4} \times 3\frac{1}{7} \times 1\frac{3}{5}$
12. $2\frac{1}{2} \times 2\frac{1}{2}$
13. $3\frac{1}{4} \times 1\frac{1}{2}$
14. $1\frac{1}{2} \times 1\frac{1}{3} \times 2$
15. $2\frac{2}{5} \times 10 \times \frac{1}{2}$

ASSIGNMENT, Part B:

1. ½ of 48
2. ½ of 32¢
3. ½ of $60
4. ¼ of 52¢
5. ¼ of 98
6. 2/5 of 45¢
7. 3/10 of $235
8. 5/8 of $158
9. 5/12 of $2,400
10. ½ of $1.80
11. ½ of $2.40
12. ½ of $3.20
13. 1½ times 12
14. 2½ times 16
15. 1¼ times 144

16. How many pieces in 5/6 of a dozen? ____________

17. How many pieces in 3/4 of a gross? ____________

18. How many ounces in 1/4 of a pound? ____________

19. Find the cost of 1/2 dozen at $1.80 a dozen. ____________

20. Find the total weight of 5 #10 cans weighing 6¾ pounds each. ____________

Lesson 9 Changing a Recipe

Objectives: You will learn how multiplication of fractions is used in food service.
You will practice changing a recipe by means of multiplication of fractions.

Related Information:

A standard recipe is one that has been designed for a set number of portions, for example, 25 portions, 50 portions, or 100 portions. It is sometimes necessary to take a standard recipe and change it to serve more, or fewer, people.

If we had a standard recipe that served 25 people and we wished to make 50 portions, we would simply multiply each quantity by 2. Another example:

6 lbs onions (for 25 portions) to 100 portions

25 divides into 100 four times......therefore multiply the quantity by 4.

4 × 6 lbs of onions = 24 lbs of onions for 100 portions

In some cases we may wish to *make the portions smaller.* Fractions can be useful in this situation. Our standard (for example) may serve 50 people, and we wish to make only 25 portions:

$\frac{\text{25 (portions) desired}}{\text{50 (portions) standard}}$ Reduce the fraction to $\frac{1}{2}$

Take ½ of each quantity. We could also use simple division and divide each quantity by 2.

Example 2: Standard recipe: 50 portions; we want 10 portions.

$\frac{\text{10 (desired)}}{\text{50 (standard}} = \frac{1}{5}$ Therefore take $\frac{1}{5}$ of each quantity.

$\frac{1}{5} \times 6 \text{ lbs} = \frac{1}{5} \times \frac{6}{1} = \frac{6}{5} = 1\frac{1}{5}$ lbs

What is $\frac{1}{5}$ of a lb? Hint: $\frac{1}{5}$ of 16 oz.

Full final answer is 1 lb and 3 oz (approximately)

ASSIGNMENT:

1. ½ of 4 oz of butter: ________

2. ¼ of 2 gallons of milk is ____ gallons or ____ quarts.

3. ¾ of 3 gallons of clams is ____ gallons or ____ quarts.

4. $\frac{1}{3}$ of 6 lbs of potatoes: ________

5. ¼ of 8 oz of tomato puree: ________

6. Your recipe serves 50 people; you wish to feed 25. Set up a fraction in lowest terms to represent the quantity you need. ________

7. Your recipe serves 100 people; you wish to feed 25. Set up a fraction that you can use to multiply each quantity in the original recipe. ________

8. Your recipe serves 100 people; you wish to feed 30. Set up the proper fraction to use to multiply each quantity. ________

9. Change the following recipe to 12 portions. (Hint – use a reasonable approximation.)

Baked stuffed pork chops. Yield: 50 portions

Ingredients	Standard	12 portions
Pork chops, 6 oz.	50	________
Basic bread stuffing	2½ qts	________
Whole-kernel corn	1 lb	________
Brown sauce	1 gal	________

10. Change the following recipe to 30 portions. (Give realistic amounts.)

Ham croquette mixture Yield: 50 portions

Ingredients	Standard	30 portions
Celery, minced	1 lb	________
Onions, minced	1 lb	________
Green pepper, minced	1 lb	________
Butter or shortening	1½ lb	________
Bread flour	1½ lb	________
Hot milk	2 qts	________
Prepared mustard	¼ cup	________
Dry mustard	2 T	________
Cooked chopped ham	8 lbs	________
Parsley, chopped	1 cup	________

11. Change the following recipe to 40 portions. (Give realistic amounts.)

Lamb a l'Indienne. Yield: 50 portions

Ingredients	Standard	40 portions
Lamb, boneless and cubed	17 lb	____________
Water	2 gal	____________
Salt	2 oz	____________
Butter	1 lb	____________
Curry powder	4 t	____________
Flour	8 oz	____________
Onions, chopped	3 lb	____________
Apples, raw, with skins	6	____________
Ham, chopped fine	¼ lb	____________
Tomatoes, medium	1 #2½ can	____________
Cream	½ gal	____________

12. Change the following recipe to 15 portions. (Give realistic amounts.)

Irish lamb stew. Yield: 50 portions

Ingredients	Standard	15 portions
Water, boiling	2 gal	____________
Lamb, fores, cut in ¾" cubes	17 lb	____________
Potatoes, sliced	6 lb	____________
Pearl onions	100	____________
Potatoes, Parisienne	100	____________
White turnips, ½" cubes	1 pint	____________
Carrots, ½" cubes	1 qt	____________
Salt and pepper	to taste	____________

Lesson 16 Division of Fractions

Objective: You will learn how to divide fractions.

Related Information:

At times it is necessary to divide a number by a fraction. If you understand how to multiply fractions, you will have no trouble dividing by fractions. To divide by a fraction, *invert* the fraction (turn it upside down) and *multiply*. It's as easy as that!

Example 1 – dividing a fraction by a fraction.

$\frac{3}{4} \div \frac{3}{8}$ Turn the $\frac{3}{8}$ upside down and change the sign of the operation.

$\frac{3}{4} \div \frac{8}{3}$ Now multiply in the same manner as in lesson 8.

$\frac{(3 \times 8 = 24)}{(4 \times 3 = 12)} \begin{matrix} \rightarrow \rightarrow \\ \rightarrow \rightarrow \end{matrix} \frac{24}{12} = 2$ (Answer)

Example 2 – dividing a whole number by a fraction.

Place the whole number over 1 and proceed as above.

$24 \div \frac{1}{4}$

$\frac{24}{1} \div \frac{1}{4}$

$\frac{24}{1} \times \frac{4}{1} = \frac{96}{1} = 96$ (Answer)

Example 3 – dividing a mixed number by a fraction or mixed number.

Change the mixed number(s) into improper fraction(s) and proceed as above.

$4\frac{1}{2} \div \frac{1}{8}$ Change $4\frac{1}{2}$ to an improper fraction.

$\frac{9}{2} \div \frac{1}{8}$ Invert divisor and multiply.

$\frac{9}{2} \times \frac{8}{1} \begin{matrix} \leftarrow \leftarrow \\ \leftarrow \leftarrow \end{matrix} \begin{matrix} (9 \times 8 = 72) \\ (2 \times 1 = 2) \end{matrix} = \frac{72}{2} = 36$ (Answer)

Take each step carefully......Don't try to combine steps. That's a good way to make a mistake.

Note that when you divide by a proper fraction, your answer is *larger than the number you started with.* Do you understand that a fraction is less than a whole? Therefore if, for example, we were to divide 1" by 1/4, our answer would be larger than 1":

1/4 goes into 1" *four* times. Check this by working it as a division problem.

How many ½-cups of milk can we get from a gallon?

1. A gallon contains 16 cups.
2. Divide 16 by 1/2.

$$16 \div \frac{1}{2}$$

$$\frac{16}{1} \times \frac{2}{1} = 32 \text{ (half cups)}$$

ASSIGNMENT:

1. $\frac{1}{3} \div \frac{3}{4}$ ______ 2. $\frac{2}{3} \div \frac{5}{12}$ ______ 3. $2 \div \frac{1}{4}$ ______

4. $16 \div \frac{1}{5}$ ______ 5. $7 \div \frac{2}{3}$ ______ 6. $14 \div \frac{7}{8}$ ______

7. $\frac{1}{4} \div \frac{1}{4}$ ______ 8. $\frac{1}{8} \div \frac{1}{8}$ ______ 9. $18 \div \frac{1}{8}$ ______

10. $11\frac{1}{3} \div 2\frac{5}{6}$ ________ 11. $2\frac{3}{4} \div \frac{3}{8}$ ________

12. $1\frac{1}{2} \times 2\frac{3}{4} \div 1\frac{3}{8}$ ________ 13. $1\frac{1}{8} \div \frac{2}{3} \times 2\frac{1}{4}$ ________

14. 16 oz $\div 1\frac{1}{2}$ ________ 15. 16 oz $\div 2\frac{1}{4}$ ________

UNIT III – ARITHMETIC OPERATIONS

Lesson 1 — Addition of Whole Numbers

Objectives: You will review the addition of whole numbers.
You will gain some experience in adding figures on an adding machine.

"Do you mind if we just sit here and count calories for a while?"

Related Information:

Addition is basic to working with numbers. In the field of commercial foods, you may have to fill out guest checks, check orders, work out schedules, or compute costs in preparing meals.

You can improve your ability to add by practice. Accuracy is essential in the everyday world of work. Consider how embarrassing it would be to hand a customer an incorrectly totaled check.

Many restaurants provide adding machines for their employees, so as to prevent errors of this sort. It would be great if you could always depend upon having an adding machine handy. Unfortunately, you cannot. Therefore you *must* be able to add accurately, and with reasonable speed.

HOW TO AVOID ERRORS:

1. Copy numbers correctly.
2. Write your numbers neatly and in *straight columns.*
3. Double-check your figures by adding again from the opposite direction.
4. Double-check your figures by *estimating.*
5. Watch carefully for the placement of decimals.

When working with a long column of numbers, you can divide the column in half and work with two shorter columns.

When you see the following words or signs, it means *add:* "sum," "total," "+" or "'addition."

In the assignment problems, you will be expected to first make all the calculations and then, if an adding machine is available, check your work on the machine.

ASSIGNMENT:

A. Add the following:

1. 86
74
63
22

2. 78
46
32
97

3. 99
86
74
82
102

4. 69
56
64
73
47
37

5. 98
36
94
60
26
57

6. 33
48
24
17
35
46

7. 643
239
103
306
709
743

8. 438
162
321
741
246
643

9. 434
162
301
741
642
947

10. $ 76.43
89.24
57.89
50.84
24.86
9.87

11. $6.57
1.27
3.94
4.15
5.34

12. $7.85
8.56
.55
2.35
14.77

13. $23.43
18.62
59.79
.74
.18
7.40

14. $2.91
6.89
.32
1.12
4.76
2.13

15. $68.54
43.23
42.78
34.14
93.24

16. $12.14
8.04
11.32
9.87
23.18
67.34

17. $5468.00
3254.00
179.00
1567.00
436.00
37.00

18. $347.23
64.22
11.11
126.66
57.27
55.34

B. Copy the following figures in vertical columns and add them.

1. 99 + 295 + 68 + 13
2. 8 + 108 + 22 + 26 + 15
3. 65 + 9 + 200 + 32 + 5
4. 26 + 189 + 12 + 74 + 14
5. 11 + 12 + 7 + 63 + 148
6. 38 + 7 + 106 + 14 + 678
7. $4.65 + 2.35 + 1.07
8. $ .08 + .23 + .94 + 1.00
9. $ .75 + .45 + .19 + .34
10. $234.88 + 49.87 + 2.36

Lesson 2 The Guest Check

Objectives: You will learn how to fill out a guest check and why each part of it is important.
You will gain practice in addition by working with guest checks.

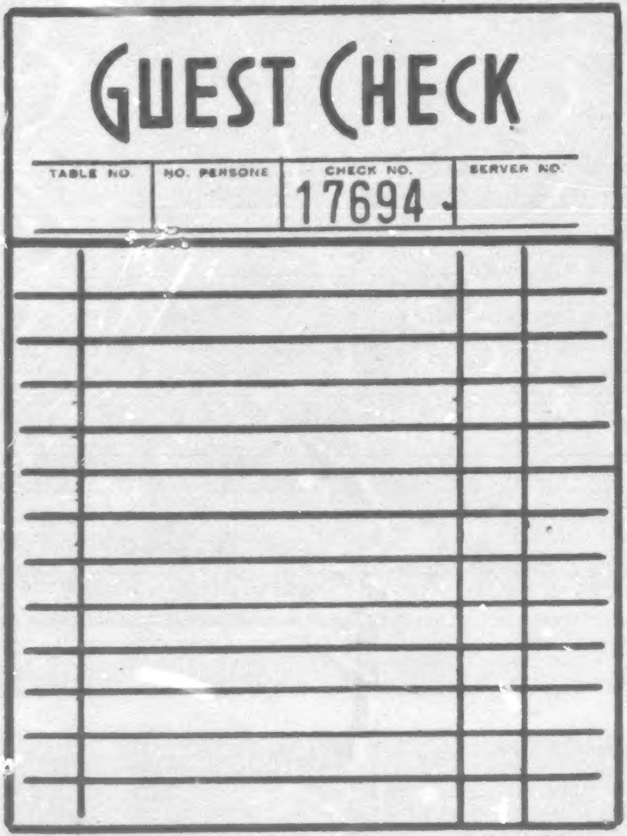
Related Information:

The guest check is a record of what the customer has eaten. The guest check is different for each restaurant. Some are pre-printed (see next page). The pre-printed form is used where there are a set number of food items offered. It is a simple matter to check off each item on such a guest check: this saves time and errors. The pre-printed check shown is from a pancake house. Similar checks are in use at many of the fast-food places.

The guest check we use in school is a simple form. Look at the empty spaces at the top. It is not necessary in school to enter the table number or number of persons fed. In a restaurant, however, it is. Where more than one person is covered by the bill, it is important for the cashier to know this. She must look to see that all customers walking out have properly paid their bill.

The checks are numbered, and this may be useful for record-keeping by the office.

The "server number" is useful to show the amount of work one person has done. Where waitresses rotate assignments, this can make sure that each one has had a fair number of customers. Waitresses receive tips when they serve; therefore someone who has served fewer customers may make less money.



GUEST CHECK

TABLE NO.	NO. PERSONS	CHECK NO.	SERVER NO.
		17694	

How to fill out the guest check.
(Demonstration with overhead projector)

1. Items in the top row were explained above.
2. In first column, enter the number or quantity of each item.
3. Describe the item in the center section.
4. The two columns on the right are for the amount of each item. Remember to keep the dollars and cents in the proper columns. Keep columns neat for easy addition.
5. Total up columns by adding.
6. Look up tax on tax chart and enter below total.
7. Add tax total to get full amount to be paid.

The Pre-Printed Guest Check

1. Note: All items are printed on the form, saving time and energy. This also keeps the guest check neat.

2. Persons, table, and waitress-number are self-explanatory.

3. Enter quantity in left-hand column. Room is also provided for an entry next to the description of the different types of pancakes.

4. Note these abbreviations.

   CE = ____________

   UP = ____________

   PO = ____________

   SCR = ____________

   R = ____________

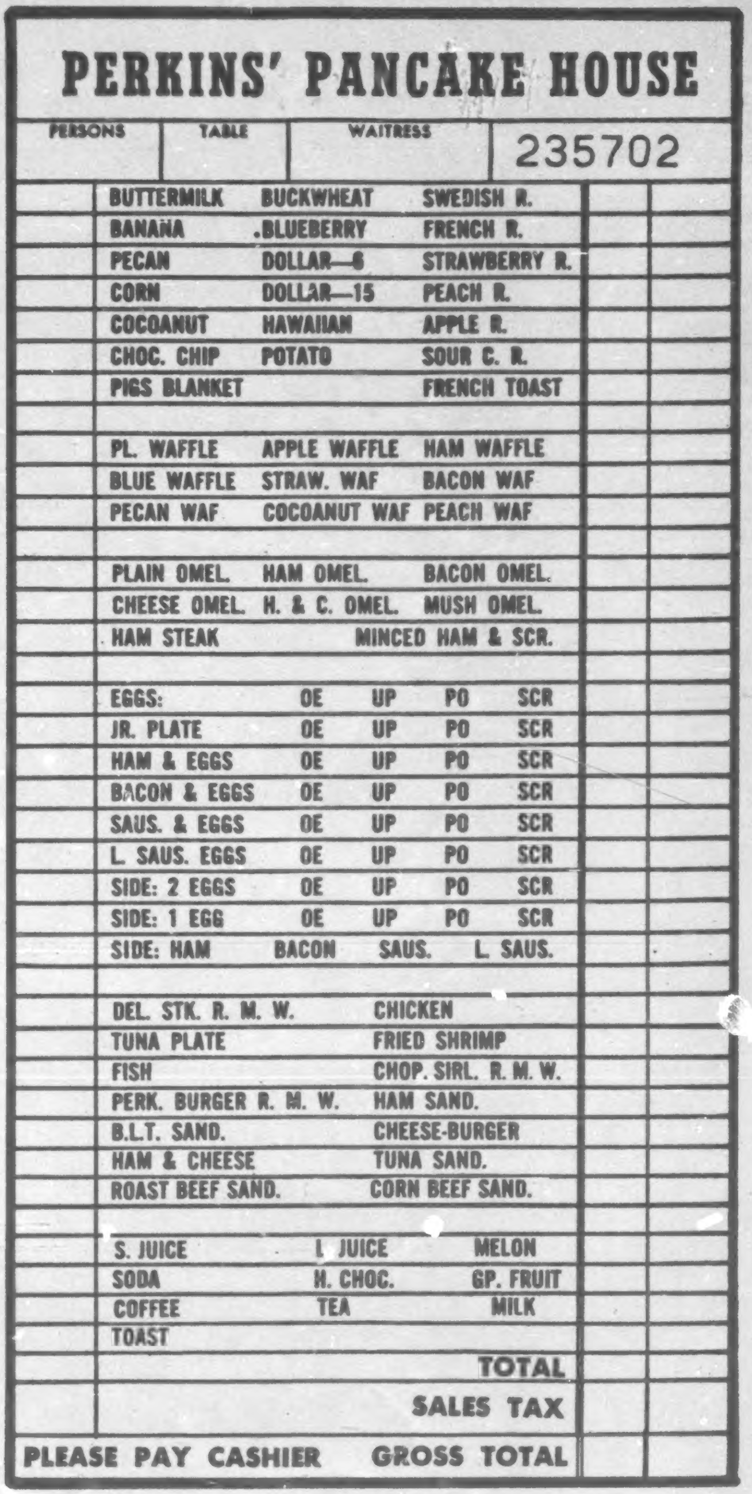
   M = ____________

   W = ____________

   B.L.T. = ____________

5. Note how clearly the total, the sales tax, and the gross total are shown. This is particularly helpful for the customer.

6. Note instructions to pay the cashier.



PERKINS' PANCAKE HOUSE

PERSONS	TABLE	WAITRESS	235702

	BUTTERMILK	BUCKWHEAT	SWEDISH R.				
	BANANA	BLUEBERRY	FRENCH R.				
	PECAN	DOLLAR—6	STRAWBERRY R.				
	CORN	DOLLAR—15	PEACH R.				
	COCOANUT	HAWAIIAN	APPLE R.				
	CHOC. CHIP	POTATO	SOUR C. R.				
	PIGS BLANKET		FRENCH TOAST				
	PL. WAFFLE	APPLE WAFFLE	HAM WAFFLE				
	BLUE WAFFLE	STRAW. WAF	BACON WAF				
	PECAN WAF	COCOANUT WAF	PEACH WAF				
	PLAIN OMEL.	HAM OMEL.	BACON OMEL.				
	CHEESE OMEL.	H. & C. OMEL.	MUSH OMEL.				
	HAM STEAK		MINCED HAM & SCR.				
	EGGS:	OE	UP	PO	SCR		
	JR. PLATE	OE	UP	PO	SCR		
	HAM & EGGS	OE	UP	PO	SCR		
	BACON & EGGS	OE	UP	PO	SCR		
	SAUS. & EGGS	OE	UP	PO	SCR		
	L. SAUS. EGGS	OE	UP	PO	SCR		
	SIDE: 2 EGGS	OE	UP	PO	SCR		
	SIDE: 1 EGG	OE	UP	PO	SCR		
	SIDE: HAM	BACON	SAUS.	L. SAUS.			
	DEL. STK. R. M. W.		CHICKEN				
	TUNA PLATE		FRIED SHRIMP				
	FISH		CHOP. SIRL. R. M. W.				
	PERK. BURGER R. M. W.		HAM SAND.				
	B.L.T. SAND.		CHEESE-BURGER				
	HAM & CHEESE		TUNA SAND.				
	ROAST BEEF SAND.		CORN BEEF SAND.				
	S. JUICE	L. JUICE	MELON				
	SODA	H. CHOC.	GP. FRUIT				
	COFFEE	TEA	MILK				
	TOAST						
			TOTAL				
			SALES TAX				
PLEASE PAY CASHIER			GROSS TOTAL				

ASSIGNMENT A:

Problems 1 – 8 on the next page are to be done on the eight blank guest-check forms supplied in this book.

Each problem indicates what has been ordered by customers at the CLAM HUT restaurant. Do each problem on a separate guest check. Look on the HUT menu for the price of each item. Look each item up carefully. A shrimp salad sandwich is very different from a shrimp-salad platter.

Use the tax chart below to compute the tax on your guest check. Notice that the amounts of the purchase are given in "ranges": .11 to .20,.21 to .40, etc. If the amount of the purchase is 11 cents, you put down 1 cent tax. If the amount is 16 cents, you still put down 1 cent tax. If the amount is .22, how much would you put down? If your answer is 2 cents, you are correct.

If the bill comes to over $10.00, take the amount over $10.00, look that up on the chart, and add it to the 50 cents for the first $10.00.

Example: $14.60 bill

$ 4.60 = .23 tax
10.00 = .50 tax
.73 Total tax

5% – SALES TAX			
Amount of Purchase	**Sales Tax**	**Amount of Purchase**	**Sales Tax**
$ .11 to $ .20	$ .01	$5.11 to $5.20	$ .26
.21 to .40	.02	5.21 to 5.40	.27
.41 to .60	.03	5.41 to 5.60	.28
.61 to .80	.04	5.61 to 5.80	.29
.81 to $1.10	.05	5.81 to 6.10	.30
$1.11 to 1.20	.06	6.11 to 6.20	.31
1.21 to 1.40	.07	6.21 to 6.40	.32
1.41 to 1.60	.08	6.41 to 6.60	.33
1.61 to 1.80	.09	6.61 to 6.80	.34
1.81 to 2.10	.10	6.81 to 7.10	.35
2.11 to 2.20	.11	7.11 to 7.20	.36
2.21 to 2.40	.12	7.21 to 7.40	.37
2.41 to 2.60	.13	7.41 to 7.60	.38
2.61 to 2.80	.14	7.61 to 7.80	.39
2.81 to 3.10	.15	7.81 to 8.10	.40
3.11 to 3.20	.16	8.11 to 8.20	.41
3.21 to 3.40	.17	8.21 to 8.40	.42
3.41 to 3.60	.18	8.41 to 8.60	.43
3.61 to 3.80	.19	8.61 to 8.80	.44
3.81 to 4.10	.20	8.81 to 9.10	.45
4.11 to 4.20	.21	9.11 to 9.20	.46
4.21 to 4.40	.22	9.21 to 9.40	.47
4.41 to 4.60	.23	9.41 to 9.60	.48
4.61 to 4.80	.24	9.61 to 9.80	.49
4.81 to 5.10	.25	9.81 to 10.10	.50

Try the following:

a. 75¢ total . . . tax = ________

b. $1.24 total . . . tax = ________

c. $5.60 total . . . tax = ________

d. $10.80 total . . . tax = ________

e. $15.20 total . . . tax = ________

f. $22.99 total . . . tax = ________

ASSIGNMENT A:

1. Frank Taylor ordered the following at the Clam Hut restaurant: A cup of clam chowder, a combination hot seafood platter, and iced tea. (Don't forget to *write the item out* on the guest check.)

2. Barbara Henson ordered 1/2 dozen clams, fried shrimp, ice cream cake roll, and milk.

3. The Kozak family of four ordered: 3 cups of clam chowder, 1 lobster bisque, a bucket of steamers, 1 fried clams, 1 baked bluefish, 1 shrimp salad platter and 1 chicken in the basket. 4 large soft drinks completed their order.

4. Joanne Jones ordered an appetizer of shrimp cocktail and an order of fried oysters. She completed her order with coffee and cheesecake.

5. Rochelle and Mike went out to dinner together and ordered a clam bucket of steamers, 2 cups of clam chowder, 1 fried scallops, 1 stuffed flounder. Rochelle had a large soft drink and Mike had iced tea.

6. Lucy dropped into the Hut for lunch and ordered tomato juice, a hamburger basket, and hot chocolate.

7. The Carr family of four ordered 2 tomato juice and 2 shrimp cocktails, 1 order of broiled fillet, 1 cold seafood platter, 1 lobster salad platter, 1 hot seafood combination, 2 milks and 2 coffees.

8. Betsy and Terry went to the Hut and ordered 2 shrimp cocktails, 2 cups of clam chowder, 1 fried shrimp and 1 fried soft clams, 2 soft drinks, and 2 ice cream rolls.

The CLAM HUT

Nibblers

STEEMERS

CLAM BUCKET	2.50
Extra Butter and Broth .. (WHEN AVAILABLE)	.15

CLAMS ON THE HALF SHELL

1/2 Dozen	1.50
1 Dozen	2.40

Tomato Juice	.25
Cup of Clam Broth	.25
Baked Stuffed Clams	1.75
Shrimp Cocktail	1.75
Seafood Cocktail	2.50

MANHATTAN CLAM CHOWDER

Cup	.50

LOBSTER BISQUE

Cup	.75

From the Galley

Tuna Salad Platter	2.95
Filet Platter (fried or broiled)..	2.95
Fried Smelts	2.95
Baked Stuffed Clams	3.25
Chef's Seafood Salad	3.50
Fried Soft Clams	4.25
Fried Shrimp	4.25
Baked Bluefish	4.25
Baked Bass	4.25
Fried Maryland Oysters	4.25
Shrimp Salad Platter	4.25
Soft Shell Crab	4.25
Crab Salad Platter	4.25
Stuffed Flounder	4.50
Fried Scallops (or broiled)	4.50
Lobster Salad Platter	5.25

ALL CHILDREN'S PLATTERS—HALF PRICE

All Platters include french fries, cole slaw, tartar sauce and a tossed salad
A specialty of the house dressing.... Russian Shrimp or Oil and Vinegar are available

COMBINATION HOT SEAFOOD — A Hearty Eater's Delight ... Filet, Shrimp, Scallops, Clams, French Fries & Cole Slaw.... 5.75

COLD SEAFOOD PLATTER — Half a cold boiled Lobster, Shrimp Salad, King Crab Salad, French Fries and Cole Slaw 5.75

ALASKAN KING CRAB LEGS and CLAWS

PRICED ACCORDING TO THE MARKET

NORTH AMERICAN LOBSTERS

CHIX 1½ LBS.

2 LBS. 3 LBS. & UP

ALL LOBSTERS ARE PRICED ACCORDING TO SIZE

"A Good Baked Lobster Takes Time to Prepare"

A Light Bite . . .

Sandwiches

Tuna Salad	.75
Filet	1.00
Fried Soft Clam	1.50
Fried Shrimp	1.50
Shrimp Salad	1.95
Soft Shell Crab	1.95
Crab Salad	1.95
Lobster Salad	3.00

Baskets

Hot Dog Basket	1.25
Hamburger Basket	1.25
Cheeseburger Basket	1.35
California Basket	1.60
Chicken in the Basket	2.95

All Baskets Include French Fries and Applesauce

Sea Sweets . . .

Ice Cream Cake Roll	.50
Jello	.50
Pudding	.60
Cheesecake	1.00

Sea Sips . . .

Tea	.25
Coffee	.25
Sanka	.30
Milk	.30
Ice Tea	.30
Soft Drinks	.30
Tab	.35
Hot Chocolate	.35

GUEST CHECK

Table No.	No. Persons	Check No.	Server No.
		17694	

GUEST CHECK

Table No.	No. Persons	Check No.	Server No.
		17695	

GUEST CHECK

Table No.	No. Persons	Check No.	Server No.
		17696	

GUEST CHECK

Table No.	No. Persons	Check No.	Server No.
		17697	

GUEST CHECK

Table No.	No. Persons	Check No.	Server No.
		17694	

GUEST CHECK

Table No.	No. Persons	Check No.	Server No.
		17695	

GUEST CHECK

Table No.	No. Persons	Check No.	Server No.
		17696	

GUEST CHECK

Table No.	No. Persons	Check No.	Server No.
		17697	

ASSIGNMENT B:

1. Total Joanne's weekly tips: Monday $8.45, Tuesday $7.90, Wednesday $6.90, Thursday $5.50, Friday $10.25. ______
2. Sarah earned the following tips: $12.75, $10.35, $9.70, $11.80, $13.20. Find the sum of Sarah's tips for the week. ______
3. Karen earned the following weekly wages for October: $125.70, $114.20, $109.60 and $120.85. Find her total for the month. ______
4. Mrs. Brown's wages amounted to the following for the month: $156.23, $174.55, $118.45, $166.23. Find the total of her wages for the month. ______
5. There were six outgoing orders for the diner on Monday, for $14.65, $9.80, $6.75, $3.80, $.75, and $7.90. What does this total? ______

ASSIGNMENT C – Bakeshop Supplement

Use the bakeshop pricelist and order blanks for the following problems:

1. Mrs. Ku[illegible]ak ordered the following items from the bake shop for Oct. 15th: 1 dozen dinner rolls, 1 rye bread (small), and two lbs of mini-Danish.
2. Mrs. Jones ordered a layer cake (large cream), a dozen apple turnovers, a half-dozen eclairs, and one coffee ring. She is going to pick up the order on Nov. 30.
3. Mr. Delaney ordered 1 large apple pie, 1 large peach pie and a dozen cream tarts. In addition he selected 1 large pumpernickel and 3 lbs of rye bread. The date of his order was June 12th.
4. Mrs. Cohen ordered 2 dozen onion rolls, 1 large chale, and 3 dozen filled danish pastry for Nov. 8th.
5. Mrs. Brown is celebrating her anniversary on January 25 and placed an order for a single-layer sheet cake to be picked up that day. She left a $3.75 deposit.
6. Mrs. Stevens placed an order for 1 dozen jelly donuts, ½ dozen cream donuts, 1 small fruit pie, 3 lbs butter cookies, and 4 dozen large hard rolls, all to be picked up on November 24.
7. Mrs. Wersan left an order for October 10, for 9 lbs of mini-Danish, a small white bread, a large rye bread, a coffee ring, and 6 charlotte russes.
8. Mrs. Soto picked up 2 coffee-cake loaves and a large white bread, and placed an order for a double-layer sheet cake, to be ready December 23. She paid the full amount for everything.

BAKESHOP PRICE LIST

BREAD AND ROLLS

DINNER ROLLS	.05
LARGE SOFT ROLLS	.09
SMALL HARD ROLLS	.05
LARGE HARD ROLLS	.09
RYE ROLLS	.12
ONION ROLLS	.09
TWIST ROLLS	.15
BAGELS	.09
HOAGIE ROLLS	.10
SMALL WHITE BREAD	.25
LARGE WHITE BREAD	.50
SMALL RYE BREAD	.40
LARGE RYE BREAD	.80
RYE BREAD BY THE POUND	.40
SMALL PUMPERNICKEL BREAD	.45
LARGE PUMPERNICKEL BREAD	.90
SMALL CHALE TWIST BREAD	.50
LARGE CHALE TWIST BREAD	.65
LINSTER TARTS	.20
COFFEE BUNS	.20
CHINESE COOKIES	.06

SINGLE-LAYER SHEET CAKE	$7.50 *
DOUBLE-LAYER SHEET CAKE	$15.00 *

DONUTS, PIES, CAKES, COOKIES .

JELLY DONUTS	.10
CREAM DONUTS	.12
TWIST AND RING DONUTS	.10
LARGE SUGAR COOKIES	.06
BUTTER COOKIES	$1.40 lb.
BUTTER COOKIES	.70 ½ lb.
BUTTER COOKIES	.35 ¼ lb.
SMALL FRUIT PIES	.65
SMALL CREAM PIES	$ 1.30
LARGE FRUIT PIES	$1.30
LARGE CREAM PIES	$1.90
FRUIT TARTS	.30
CREAM TARTS	.40
CHARLOTTE RUSSE	.25
CUPCAKES	.10
SMALL BUTTERCREAM LAYERS	$1.15
LARGE BUTTERCREAM LAYERS	$1.50
SMALL CREAM LAYERS	$1.35
LARGE CREAM LAYERS	$1.90
ECLAIRS	.30
BROWNIES	.12
MINI DANISH	$1.65
FILLED DANISH PASTRY	.15
PLAIN DANISH PASTRY	.12
APPLE TURNOVERS	.15
COFFEE RINGS	.90
COFFEE CAKE LOAVES	.95

* 50% deposit required

MIDDLESEX COUNTY
VOCATIONAL AND TECHNICAL HIGH SCHOOL

BAKE SHOP

Wanted (day) (date)

Name

No.	Item	@	Ext.
	Total		

		Amt.	Date
Taken by			
Put up by			
Given out by			

MIDDLESEX COUNTY
VOCATIONAL AND TECHNICAL HIGH SCHOOL
BAKE SHOP
Wanted (day) (date)
Name

No.	Item	@	Ext.
	Total		

		Amt.	Date
Taken by			
Put up by			
Given out by			

MIDDLESEX COUNTY
VOCATIONAL AND TECHNICAL HIGH SCHOOL
BAKE SHOP
Wanted (day) (date)
Name

No.	Item	@	Ext.
	Total		

		Amt.	Date
Taken by			
Put up by			
Given out by			

MIDDLESEX COUNTY
VOCATIONAL AND TECHNICAL HIGH SCHOOL
BAKE SHOP
Wanted (day) (date)
Name

No.	Item	@	Ext.
	Total		

		Amt.	Date
Taken by			
Put up by			
Given out by			

MIDDLESEX COUNTY
VOCATIONAL AND TECHNICAL HIGH SCHOOL

BAKE SHOP

Wanted
(day) (date)

Name

No.	Item	@	Ext.
	Total		

		Amt.	Date
Taken by			
Put up by			
Given out by			

MIDDLESEX COUNTY
VOCATIONAL AND TECHNICAL HIGH SCHOOL

BAKE SHOP

Wanted
(day) (date)

Name

No.	Item	@	Ext.
	Total		

		Amt.	Date
Taken by			
Put up by			
Given out by			

MIDDLESEX COUNTY
VOCATIONAL AND TECHNICAL HIGH SCHOOL

BAKE SHOP

Wanted
(day) (date)

Name

No.	Item	@	Ext.
	Total		

		Amt.	Date
Taken by			
Put up by			
Given out by			

MIDDLESEX COUNTY
VOCATIONAL AND TECHNICAL HIGH SCHOOL

BAKE SHOP

Wanted
(day) (date)

Name

No.	Item	@	Ext.
	Total		

		Amt.	Date
Taken by			
Put up by			
Given out by			

Objective: You will review writing numbers from words and writing words from numbers.

Related Information:

As soon as you get your first full-time job, or perhaps before then, you will no doubt open a checking account at a bank. Every check you write must have the dollar-amount written two ways, in figures and in words. You can see how important it is to know how to do both accurately.

When working as a cook or performing other duties in food service, it is often necessary to translate numbers into words in passing information on to other personnel. When listening to instructions from other people, you must be able to translate words into numbers and write them correctly.

Orders for supplies are often placed over the phone. It is good procedure to have the person receiving the order repeat the details of the order to prevent errors. Make certain the quantities are indicated clearly.

ASSIGNMENT:

A. Change the following words into numbers:

1. Three hundred ______
2. One hundred and forty-three ______
3. Sixteen dollars and seven cents ______
4. Seventy-nine dollars and sixty-three cents ______
5. One hundred and sixty degrees. ______
6. One thousand five hundred and twenty-three ______
7. Three thousand and ten ______
8. The new delivery truck cost five thousand four hundred and sixty-three dollars and seventy-five cents. ______
9. John's wages for the year came to twelve thousand two hundred and five dollars. ______
10. Jean earns two dollars and sixty-six cents an hour. ______
11. Let the roast cook for two hours and fifteen minutes. ______
12. The order totaled ninety-seven dollars and twenty-two cents. ______
13. Your invoice number is seven thousand five hundred and four. ______
14. Send two dozen platters, catalog number three hundred and thirteen. ______

15. If you have any complaints on your order, call six-three-four–seven five hundred. ______

16. Our restaurant grossed three hundred and fifty thousand dollars for the year. ______

17. Check our requisition number one thousand one hundred and twelve. ______

18. We do not have item seven on your purchase order number three thousand two hundred and seven. ______

19. Deliver the order on November seventh, to fourteen-forty Broadway. ______

20. Three hundred twenty-four thousand, five hundred and seventy-two satisfied customers. ______

B. Rewrite the following numbers in words:

1. $17.05 ______
2. $189.76 ______
3. 1003 ______
4. 10,008 ______
5. 7,653 ______
6. 982 ______
7. $71.93 ______
8. $23.87 ______
9. 124,000 ______
10. 19,000,238 ______
11. $1,600,058 ______
12. $54,006 ______
13. $4,694.75 ______
14. $8.97 ______
15. $15.02 ______

Objective: You will review the subtraction of numbers.

Related Information:

Subtraction is used in many operations involving money. For example, you earned $100.00 last week and your employer *deducted* $20.00 from your pay for taxes and social security. You found $80.00 in your pay envelope. When you deduct you are subtracting: 20 dollars subtracted from 100 dollars leaves 80 dollars. The amount you earned is called your *gross* pay; the amount you take home is called your *net* pay.

The cafeteria showed $1,000.00 on the cash-register tape last week. The total amount of money taken in is called *gross sales* or *gross income*. The school had to pay for food, labor, electricity, gas, heat, etc. All these items are called *expenses*, and they must be paid out of the gross income. The *net income* (or profit) is what you have left after subtracting the expenses. Look at the drawing below. The cafeteria does not keep the gross income......it keeps the net income.

GROSS INCOME – EXPENSES = NET INCOME (PROFIT)

Total taken in – wages, materials, electricity, fuel, taxes = What is left for the company

In subtraction we use the sign "– ". In word problems the words "subtract," "difference," "minus," "deduct," or "take away" are some of the words used to indicate a subtraction operation. Others are "net" as opposed to "gross," "amount left," "take-home (pay)," and others.

ASSIGNMENT, Part A:

1. 87 – 34	2. 538 – 159	3. 4328 – 13	4. 2317 – 603	5. $4.15 – .87
6. $34.18 – 5.23	7. 8593 – 3056	8. 5994 – 5917	9. 23,108 – 2,550	10. 489,340 – 265,932

ASSIGNMENT, Part B:

1. The cafeteria received 300 containers of milk yesterday. At the end of the day 26 were left. How many containers of milk had been sold? ______

2. Four dozen chocolate cones were available for sale this morning, and 32 were sold during lunch. How many cones were left? ______

3. Forty-eight #10 cans of pear halves were shown on the inventory list at the beginning of the month. Six were left on the shelf at the end of the month. How many cans had been used? ______

4. Joanne took in $18.90 in tips at the dinner meal. She gave $4.70 to the busboy. How much did she have left? ______

5. Karen's gross pay for the week came to $156.78. Her deductions amounted to $35.13. What was her take-home pay? ______

6. Sales at the Griddle restaurant came to $28,560 for the month. Expenses amounted to $27,150. What was the net profit? ______

7. The difference between 18 and 11 is: ______

8. Two hundred and twenty-five dollars minus one hundred and fifty-three dollars amounts to: ______

9. The restaurant had 60 pounds of hamburger patties on hand at the beginning of the week. Twelve pounds were used on Monday, 5 pounds on Tuesday, 16 pounds on Wednesday, 21 pounds on Thursday. How many pounds were on hand for Friday's meals? ______

10. Sally is a waitress. Last week she took home $158.40. Only $120.67 of this was in her pay envelope; the rest was in tips. How much had she earned in tips? ______

11. A basket of grapes weighed 10 pounds. If the basket itself weighed 1 pound, what was the net weight of the grapes? ______

12. A store clerk weighed out 2 pounds of fish fillets in a cardboard tub. If the tub weighed 1 ounce, how much fish was there? ______

UNIT III – ARITHMETIC OPERATIONS

Lesson 5 — The Production Report

Objective: You will use subtraction in making out production reports.

Related Information:

It is important to know how much of each item to prepare. While some items can be stored and sold the next day, or frozen, others cannot, and may represent waste. Waste costs money, and the objective of every business is to to make a profit.

Guessing or estimating may be necessary when a business first opens, but once a record of what has been sold can be obtained, it is then possible to plan more accurately for the next day, week, or month.

A production report lists the items of food that have been made, what is left over, and what has been sold. Below you will find a section of a production report form, showing how to fill one out.

FOOD	Number Prepared	Number Returned	Number Sold
steaks	60	8	52

Note: Subtract the number returned from the number prepared, and you have the number sold.

Number prepared: 60
Number returned: 8
Number sold: 52

ASSIGNMENT:

1. Using the following information, fill out a production report:

Food	Number Prepared	Number Returned
Soup	100	18
Baked pork chops	65	12
Chicken croquettes	40	6
Mashed potatoes	100	15
Gravy	3 qts	1 pint
Layer cakes	6	1
Fruit cups	50	15
Rice custard	30	13
Ham sandwiches	25	5
Cheese sandwiches	20	3

PRODUCTION REPORT Date: ______________________

Food	Number Prepared	Number Returned	Number Sold

Name of person preparing report: ______________________

2. Fill out a production report using the following information:

Food	Number Prepared	Number Returned
Tomato soup	60	10
Clam chowder	50	0
Potato soup	30	9
Split pea	60	10
Egg salad sandwiches	30	9
Tapicoa pudding	30	10
Apple pie	50	30
Pumpkin pie	50	0
Hamburger and roll	125	19
Frankfurter and roll	75	14

PRODUCTION REPORT Date: ____________________

Food	Number Prepared	Number Returned	Number Sold

Name of person preparing report: ____________________

3. The cook ordered 25 porterhouse steaks. Five were left at the end of the day. There was a record of 19 sold. Does this record balance? What is the difference? What might be some reasons for the discrepancy?

4. The production report showed that 75 portions of spaghetti were prepared. The server was able to get 70 from the pan. What was the difference? How might it be accounted for?

5. Sixty-five baked custards were prepared. The counter server accidentally dropped four. How many were actually available for sale?

6. The sandwich cook received 45 slices of ham, 20 slices of cheese, and 40 slices of ham bologna for sandwiches. At the end of the day there were 5 slices of ham, 10 slices of cheese, and 15 slices of bologna left. How many sandwiches of each kind had been sold if one slice of each was used for a sandwich?

UNIT III – ARITHMETIC OPERATIONS

Lesson 6 Multiplication

Objective: You will review the multiplication of numbers.

Related Information:

Multiplication is used in many operations around the restaurant.

Example 1: To compute costs of materials from price lists:
12 cans at $4.10 a can. Multiply 12 X 4.10.

$$\begin{array}{lr} \$ & 4.10 \\ & \times\ 12 \\ \hline \$ & 49.20 \end{array}$$

Example 2: To work out pay for work:
Joan worked 40 hours at $2.25 per hour.

$$\begin{array}{lr} \$ & 2.25 \\ & \times 40 \\ \hline \$ & 90.00 \end{array}$$

Example 3: To change quantities in recipes:
A recipe calls for 3 quarts of creole sauce. To get five times the amount:

$$5 \times 3 = 15 \text{ qts}$$

Certain words will help you recognize multiplication problems. We have already seen that the word "of" in many fraction problems usually indicates the operation of multiplication; similarly the word "at" or the symbol @ does (so many *at* such and such a price). "Times" and "X" and "find the product" also indicate multiplication, as you know.

ASSIGNMENT:

Multiply the following:

1. $\begin{array}{r} 156 \\ \times\ \ 8 \\ \hline \end{array}$
2. $\begin{array}{r} 543 \\ \times 60 \\ \hline \end{array}$
3. $\begin{array}{r} 765 \\ \times 32 \\ \hline \end{array}$
4. $\begin{array}{r} 784 \\ \times 209 \\ \hline \end{array}$

5. 3,595
× 890

6. 1,876
× 607

7. $ 4.75
× 40

8. $ 144
× 2.10

9. $5.25
× 12

10. $ 1.85
× 23

11. $ 18.95
× 16

12. 6092
× 104

REFERENCE PAGE

The following information summarizes the material on measurements (in Unit I) and may be useful to you while working on the assignments in this book:

Abbreviations

t or tsp = teaspoon
T or Tbsp = tablespoon
c = cup
pt = pint
qt = quart

bu = bushel
bch = bunch
oz = ounce
lb or # = pound
gal = gallon

Equivalents

3 tsp = 1 T
2 T = 1 fl oz
8 fl oz = 1 cup
16 T = 1 cup
2 c = 1 pint

2 pts = 1 quart
4 c = 1 quart
4 qts = 1 gallon
16 oz = 1 pound

One #10 can will yield approximately 25 servings (4 oz each)
1 quart of any liquid equals approximately 2 lbs.

MULTIPLICATION TABLE

	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Objective: You will use multiplication in several different types of work in the foods trades.

Related Information:

In this lesson you will practice multiplying numbers just as you might have to in the trades.

CHANGING RECIPES BY MULTIPLICATION

ASSIGNMENT:

Part A: Room is provided for two changes on each recipe given below. Your instructor may wish to change the instructions, however, from those given. Express each answer in units that you would be likely to use.

Beef stroganoff. Yield 48 portions. New yields 144 and 240.

Ingredients	Amount	New Amount	New Amount
Tenderloin tips	12 lbs		
Vinegar	1 cup		
White wine	1 cup		
Rich brown sauce	3 qts		
Sour cream	24 oz		
Mushrooms, sliced	24 oz		
Butter	6 oz		

Potato salad. Yield 50 portions New yields 200 and 300.

Ingredients	Amount	New Amount	New Amount
Celery, diced fine	1½ lbs		
Onion, minced	3 oz		
Hard-cooked eggs, chopped	8		
Pimentos, diced, drained	7-oz can		
Mayonnaise	1 qt		
Potatoes	12 lbs		
French dressing	5 oz		
Salt and pepper	to taste		
Lettuce	4 heads		

French salad dressing. Yield 1 qt. New yields 3 qts and 7 qts.

Ingredients	Amount	New Amount	New Amount
Vinegar, cider	1 cup		
Salt	1 tbsp		
Mustard, dry	1 tbsp		
Sugar	1 tsp		
White pepper	½ tsp		
Salad oil	3 cups		

Manhattan clam chowder. Yield 50 portions. New yields 200 and 800.

Ingredients	Amount	New Amount	New Amount
Clams, chopped	3 qts or 2 # 5 cans		
Water	5 qts		
Potatoes	1 lb		
Salt pork, chopped fine	12 oz		
Garlic	1 tsp		
Celery	1 lb		
Onions	2 lbs		
Carrots	8 oz		
Leeks, diced small	8 oz		
Peppers, green, diced small	8 oz		
Tomatoes, canned, chopped	1 qt		
Sachet bag	1		
Salt	1½ tbsp		
White pepper	½ tsp		
Worcestershire sauce (optional)	1 tbsp		

Part B: Costs and Wages

1. The cafeteria ordered 4 cases of sliced mushrooms at $32.18 a case (4 #10 cans to the case). What was the amount due on the order? ____________

2. Jim Reynolds worked 40 hours at $3.78 an hour. What was his gross pay for the week? ____________

3. The Admiral restaurant ordered:
   8 Chinese strainers at $9.50 ea
   3 Wire whips at $3.20 ea
   4 slotted turners at $.90 ea
   5 # 20 ice cream scoops at $3.95 ea
   What was the total amount of the order? ____________

4. The cafeteria was planning to replace the chairs with new tubular steel stacking chairs at $12.95 apiece. How much would 285 chairs cost? ____________

5. What is the total cost of 7 polyethylene containers at $8.50 each? ____________

6. Oscar worked 8 hours on Monday, 6 hours on Tuesday, 7 hours on Wednesday, 8 hours on Thursday, and 4 hours on Friday. At $2.85 an hour, what was his gross pay for the week? ____________

7. Compute the cost of 5 cases of lasagna at $3.92 a case. ____________

8. The Jones family visited the Admiral restaurant and ordered 4 filet dinners at $4.75 ea. What was the total amount on the bill? ____________

9. Joan works 4 hours a day, 5 days a week, at $2.10 an hour. What is her gross pay? ____________

10. The electric bill for the Hut restaurant averages $220 a month. How much would it come to for a year? ____________

Part C: The Counter Report

The counter report is similar to the production report you filled out in lesson 5, but it contains additional information. The counter report includes the price of the item.

After determining how many items have been sold, you must multiply the unit price (the price for one) by the number sold to determine the total value of what has been sold.

The counter report, if done accurately on all items, would give the restaurant supervisor some control over what is being sold. The total value as shown on the counter reports should equal what is shown on the cash register.

COUNTER REPORT Date: ______________________

Food	Number Prepared	Number Returned	Number Sold	Price per item	Total value sold
Tomato soup	75	25		.30	
Egg salad sand.	50	8		.60	
Tuna sandwich	50	12		.70	
Ham sandwich	50	0		.85	
Veal cutlet	75	17		1.10	
Tuna salad	25	3		.95	
Apple pie	40	5		.35	
Custard	50	9		.25	
Chocolate layer	30	6		.35	
Cup cakes	30	2		.20	

______________________ Total: __________

Name of person preparing report

COUNTER REPORT Date: ______________________

Food	Number Prepared	Number Returned	Number Sold	Price per item	Total value sold
Clam chowder	100	8		.40	
Split pea	75	14		.30	
Steak sandwich	75	4		.85	
Fish dinner	75	18		.85	
Chicken salad	40	11		.80	
Cottage cheese	15	2		.55	
Cherry pie	50	7		.35	
Milk	100	14		.25	
Coffee	50	0		.20	
Iced tea	50	15		.25	

______________________ Total: __________

Name of person preparing report

Recipe Cost Control Form

Prices for food items are determined by calculating the cost of all the ingredients that go into the recipe. In addition to the cost of the ingredients, the person who determines prices must add on:

Labor costs: wages for all the people working in the restaurant

Overhead: rent, heat, electricity, repairs, new equipment, insurance, taxes, etc.

Profit: the reason for the owner's being in business

The "recipe cost control form" helps determine how much a portion of food costs. This form could be a printed card kept on file and changed as prices change on the food items. Below is the explanation of the various items on the form.

STANDARD RECIPE COST CONTROL FORM		Recipe Item: Yield: Portion Size:	
Ingredients	Quantity	Market Price	Extension
		Total cost	
Date Prices computed:		Cost per portion	

1. Recipe Item: the name of the food. Example: Hamburger platter
2. Yield: the number of portions from this recipe. (25, 50, 100)
3. Portion size: All foods, even hamburgers, can be made in different sizes.
4. Ingredients: the names of the items going into the food.
5. Quantity: the amount of each ingredient the recipe calls for
6. Market price: the price one unit of each ingredient costs the restaurant.
7. Extension: Here you *multiply* the quantity times the price.
8. Total cost: Add up all of the extensions.
9. Cost per portion: Divide the number of portions (yield) into the total cost to find the price per portion.

Don't forget: *this is not the selling price.* Remember the wages, overhead, and profit mentioned above.

Part D: Complete the following recipe cost control forms:

STANDARD RECIPE COST CONTROL FORM

Recipe Item: Macaroni & Cheese
Yield: 50
Portion Size: 6-oz. ladle

Ingredients	Quantity	Market Price	Extension
Macaroni	6 lbs	.35 per lb	
Water	6 gallons		
Salt	3 oz	.08 per lb	
Butter	2¼ lbs	.90 per lb	
Flour	1½ lbs	.25 per lb	
Hot milk	3½ gallons	1.30 per gal	
Worcestershire sauce	3 T	. . . . . .	.20
American cheese	8 lbs	1.59 lb	
		Total cost	
Date prices computed:		Cost per portion	

STANDARD RECIPE COST CONTROL FORM

Recipe Item: Sausage patty sandwich
Yield: 50
Portion Size: 2 oz.

Ingredients	Quantity	Market Price	Extension
Ground pork	15 lbs	1.49 per lb	
Luncheon meat	3 lbs	1.39 per lb	
Rolled oats	3 lbs	.45 per lb	
Eggs	10 eggs	.79 per doz	
Milk	3 qts	.35 per qt	
Pepper	1 T	. . . . .	.04
Salt	2 oz	.08 per lb	
Poultry seasoning	1 T	. . . . .	.06
		Total cost	
Date prices computed:		Cost per portion	

STANDARD RECIPE COST CONTROL FORM

Recipe Item: Chicken Chow Mein
Yield: 50
Portion Size: 6 oz

Ingredients	Quantity	Market Price	Extension
Chicken, boiled	8 lbs	1.05 per lb	
Salad oil	1 pint	1.20 per qt	
Onion	6 lbs	.15 per lb	
Chicken stock	1½ gal	. . . . . .	.60
Soy sauce	4 oz	.39 per 4-oz btl	
Bean sprouts	2 #10 cans	2.10 per #10 can	
Corn starch	14 oz	.39 per lb	
Cold water	1 pint		
		Total cost	
Date prices computed:		Cost per portion	

STANDARD RECIPE COST CONTROL FORM

Recipe Item: Salisbury steak
Yield: 100
Portion Size: 3 oz

Ingredients	Quantity	Market Price	Extension
Chopped meat	20 lbs	.95 per lb	
Onion soup	1 envelope	.49 box of 2 env	
Garlic powder	1 tsp	. . . . .	.02
Eggs	9	.79 doz	
Bread crumbs	2½ lbs	.59 per lb	
Milk	2 cups	.33 per qt	
Beef base	½ cup	1.75 for 1-lb jar	
Water	1 cup		
		Total cost	
Date prices computed:		Cost per portion	

UNIT III – ARITHMETIC OPERATIONS

Lesson 8 **Division**

Objectives: You will review the practice of division.
You will solve shop-related problems by using division.

Related Information:

One use for division is in finding averages. For example, the teacher finds your test grade for the marking period by using division.

Example: Average these test scores: 90%, 70%, 80% and 75%.

$$\text{Add: } \begin{array}{r} 90 \\ 70 \\ 80 \\ \underline{+75} \\ 315 \end{array}$$

Divide the total by the number of tests taken.

$$\begin{array}{r} 78 \\ 4\overline{)315} \\ \underline{28} \\ 35 \\ \underline{32} \\ 3 \end{array} = 78\tfrac{3}{4} \text{ or } 79 \text{ average}$$

We may have reason in food service to find the average number of a particular item sold per day in order to come up with an amount to prepare each day. (For this we would use results of production reports.)

We may have reason to find the average number of customers served per day, the average amount spent by each customer, the average number of hours worked by each employee, the average number of days absent, or the average amount of sales each week.

UNIT PRICING

Unit pricing means determining what we are actually paying for a standard amount of an item when we shop. Foods often come packaged in a variety of packages of different shapes and sizes. To actually compare them, it is necessary to compare the price of a standard quantity of each product.

One *ounce* of product A compared to one *ounce* of B.

One *pound* of product X compared to one *pound* of Y.

One *quart* of product M compared to one *quart* of product N.

To find the price of the standard unit we generally must *divide*.

1 dozen eggs cost 96¢. What is the cost of one egg?

There are 12 eggs to the dozen $\begin{array}{r} 8 \\ 12\overline{)96} \end{array}$ 8 cents.

As the result of demands for consumer protection, some cities and states have passed laws making it necessary for stores to give the unit prices as well as the actual selling prices of the food packages.

For example, Brand X of pancake syrup costs .89 for 12 fluid ounces.

Unit price? Divide 12 into 89 to find the price of *one* fluid ounce.

$$\begin{array}{r} .074 \\ 12\,\overline{)\,.89} \\ \underline{84} \\ 50 \end{array} \leftarrow \text{Cost per fluid ounce}$$

Brand Y, found in a larger size, costs 1.59 for 24 fluid ounces.

$$\begin{array}{r} .066 \\ 24\,\overline{)\,1.59} \\ \underline{1\,44} \\ 150 \end{array} \leftarrow \text{Cost per fluid ounce}$$

Brand Y costs about 1¢ less per fluid ounce than Brand X.

Other considerations may, of course, override the saving of 1¢ per ounce. Taste, ingredients, or even the size and shape of the container are a few of the considerations for this particular product.

Sometimes we do not wish to purchase the quantity listed in the catalog.

Example: Plastic trays cost $13.80 a dozen. We wish to order only three trays. How much will 3 trays cost?

First find the *unit price:*

$$\begin{array}{r} 1.15 \\ 12\,\overline{)\,13.80} \\ \underline{12} \\ 18 \\ \underline{12} \\ 60 \\ \underline{60} \end{array} \leftarrow \text{cost per tray}$$

3 X $1.15 = $3.45 for three trays

So you see that the words "average," "for each," "per unit" all suggest the operation of division, as well as the words "divide" or "go into."

ASSIGNMENT:

A. Divide the following:

1. 836 ÷ 4 ________
2. 2390 ÷ 8 ________
3. 1924 ÷ 37 ________
4. 10800 ÷ 54 ________

5. 2575 ÷ 15

6. 829 ÷ 23

7. $1875 ÷ 25

8. $1500 ÷ 25

9. 3750 ÷ 125

10. $3490 ÷ 18

B. Word Problems

1. Your grades in 6 tests were 75%, 90%, 100%, 80%, 60% and 85%. What is your test average?

2. A can of pears costs $1.25, peaches $1.10, apricots $1.50. What is the average cost per can of fruit?

3. Waitress Joan earned $8.60 in tips one day, Alice $6.70, Sarah $7.40. What was the average for our waitresses?

4. On Monday our restaurant had 60 customers for breakfast, 78 on Tuesday, 94 on Wednesday, 82 on Thursday, 88 on Friday, 64 on Saturday and 112 on Sunday. What was the average number of customers we served this week for breakfast?

5. Our restaurant took in $4,500 the first week in October, $5,800 the second week, $5,650 the third week, and $6,400 the fourth week. What was the average income of the restaurant per week for the month of October?

6. A case of Old Bean Pot baked beans contains 12 No. 5 cans of beans. The price per case is $8.85. What is the price of one can?

7. One case of Smoothee mayonnaise contains 12 bottles. The cost of the case is $12.79. What is the price of one bottle?

8. A case of Prickle dill pickles costs $4.29. It contains twelve 16-ounce bottles. What does one bottle of pickles cost? What is the cost per ounce?

9. Stainless steel teaspoons cost $1.60 per dozen. What is the unit price?

10. Medium-heavy stainless steel spoons cost $1.20 a dozen. What is the unit price? How much will be saved per spoon over the spoons in problem 9?

11. A No. 10 can of peaches costs $2.20. With 25 servings to the can, what will one serving cost?

12. Ten-inch heavy plastic plates regularly cost $14.40 per dozen. The special sale price is $6.60 per dozen.
    a. What is the unit cost at the regular price?
    b. What is the unit cost at the sale price?
    c. How much money is saved per plate at the sale price?

13. Mr. Clark's annual salary is $11,460. What is his monthly salary? What is his weekly salary?

14. The eight cooks and waitresses decided to chip in to buy a wedding present for one of the employees. The present cost $34.90. What was each person's share?

15. Richard earns $140 a week for a 40-hour week. What is his hourly rate?

16. A restaurant can usually save money by buying in larger quantities. We generally ask for the "price break". One dozen sugar pourers cost $5.40 a dozen. When you buy 3 or more dozen, the price goes down to $4.80 a dozen.
    a. What is the saving per dozen at the "price break" price?
    b. How much is saved *per pourer* at the "price break" price?

17. Sugar-packet holders cost $7.20 a dozen in lots of 5 dozen or less. In lots of 6 dozen or over they cost $6.60 per dozen. How much is saved *per holder* in lots over 6 dozen?

18. Gloppy-brand ketchup costs 32¢ per 14-oz bottle. What is the unit price (price per ounce)?

19. Glazed doughnuts cost 69¢ per 12-oz package. At 6 per package, what is the price per doughnut?

20. Flavor-Flow instant coffee sells for $1.95 per 10-oz jar. Wake-Up brand costs $2.05 per 8 oz jar. What is the difference in cost *per ounce* between the two different brands? (Hint: find the unit price of each first.)

Lesson 9 Unit Prices

Objective: You will practice looking up prices and computing costs per unit.

Related Information:

On the next page is a price list for commercial food supplies, and on page 106 is a similar list for bakeshop ingredients. The prices on the list are the costs *per case*, per *100-lb bag*, etc. In your recipes you generally use *pounds, cans, cups, ounces.* In short, your recipes call for much smaller quantities than those you buy in.

You have to change the cost per 100 pounds to cost per pound or per cup or per ounce, as called for in the recipe. Begin with the price list and change the *cost per case* to unit cost (cost per can, pound, etc). This will help you to find the cost of smaller units as needed in your recipe.

The chart below may prove helpful in finding the unit you need.

Unit Chart

To find cost of:	*When you know the cost of:*	*Divide:*	*(Because there are:)*
1 pound	100-lb bag	100) price per 100 lb	(100 lb to bag)
1 ounce	1 pound	16) price per lb	(16 oz to lb)
1 # 10 can	1 case	6) price per case	(6 cans to case)
1 portion	1 #10 can	25) price per can	(25 portions to can)
1 piece	1 dozen	12) price per dozen	(12 pieces in doz)
1 dozen eggs	1 case	30) price per case	(30 doz eggs in case)
1 quart	1 gallon	4) price per gallon	(4 qts a gal)
1 pint	1 quart	2) price per quart	(2 pints to a qt)
1 cup	1 quart	4) price per quart	(4 cups to a qt)
1 fl oz	1 cup	8) price per cup	(8 oz to 1 cup)
1 tablespoon	1 cup	16) price per cup	(16 T to a cup)
1 tablespoon	1 ounce	2) price per oz	(2 T to an oz)
1 teaspoon	1 T	3) price per T	(3 t to a T)
1 pinch	1 t	2) price per t	(2 pchs to a t)

Here are two examples of how you might use these tables:

Example 1: Your recipe calls for 2 lbs brown sugar.
From the table on the next page, 24 1-lb boxes cost $12.25
One pound costs 24) 12.25 = .51 (Fill in the unit cost on the table.)
Then 2 lbs cost 2 X .51 = $1.02.

Example 2: Your recipe calls for 4 oz salad oil

6 1-gallon cans cost $36.50
Dividing, you get $6.08 for 1 gallon. (Write it in on the chart.)
Divide 4 into $6.08 to find cost per quart = $1.52
Divide 4 into $1.52 to find cost per cup = .38
There are 8 oz to a cup, and you need 4 oz. That is ½ of .38, or .19

It is possible to take shortcuts to save time.....so think as you do the problems. Round off your figures if necessary as you go along.

ASSIGNMENT A:
Compute the unit price for each food in the chart below.

Item	Size of Package Used	Amt. in Case (or Amt. Purchased)	Price Per Case (or Per Purchase)	Price Per Unit
Almond extract	1-qt bottle	1 bottle	$3.50	___ per oz
Apples, canned	#10 can	6 cans	14.50	___ per can
Bacon	1 lb	1 pound	1.13	
Basil, dry	1-lb can	1 can	7.65	___ per oz
Beans, kidney	#10 can	6 cans	11.10	___ per can
Beans, string	#10 can	6 cans	8.55	___ per can
Beef, bottom round	1 lb		1.69	
Beef, ground	10 lb	10-lb bag	10.40	___ per lb
Beef base	1-lb can	12 cans	21.45	___ per lb
Butter, prints	1 lb	30 lbs	23.40	___ per lb
Bread crumbs	1 lb	25-lb bag	8.75	___ per lb
Cabbage	head	med. head	.34	
Carrots, canned	#10 can	6 cans	7.25	___ per can
Celery	stalk	36 per crate	9.25	___ per stalk
Chicken, fryer	whole	per pound	.59	
Chicken base	1-lb can	12 cans	21.45	___ per lb
Cheese, parmesan	1-lb jar	12 jars	24.36	___ per lb
Cinnamon	14-oz can	1 can	3.06	___ per oz
Corn starch	1-lb box	24 boxes	6.90	___ per oz
Eggs	1 egg	dozen	.85	___ each
Flour, all-purpose	100-lb bag	100-lb bag	14.95	___ per lb
Ginger	1-lb can	1-lb can	2.96	___ per oz
Ham, boneless	1 lb		1.79	
Lemons	1 lemon	1 doz	1.00	___ each
Lobster meat, cooked	1 lb		5.80	___ per oz
Margarine	1-lb print	30 lbs	16.50	___ per lb
Milk	qt	1 gallon	1.29	___ per qt
Mushrooms	1 lb		.99	___ per oz
Noodles	10-lb box	10-lb box	4.90	___ per lb
Oil, olive	1 gal can	1 can	10.61	___ per cup
Oil, salad	1 gal can	6 cans	36.50	___ per cup

Item	Size of Package Used	Amt. in Case (or Amt. Purchased)	Price Per Case (or Per Purchase)	Price Per Unit
Onions	50-lb bag	1 bag	5.75	____ per lb
Parsley, dry flaked	8-oz can	1 can	1.75	____ per oz
Peaches, canned	#10 can	6 cans	12.60	____ per can
Peas, canned	#10 can	6 cans	8.90	____ per can
Peppers, green	1 pepper	6 medium	.75	____ each
Pickles, sweet	1 jar	jar (20 pickles)	.69	____ per pickle
Pimentos	7-oz can	24 cans	11.67	____ per can
Rice	25-lb bag	25-lb bag	12.20	____ per lb
Salt	1lb 10oz box	1 box	.13	____ per oz
Sugar, brown	1-lb box	24 boxes	7.45	____ per lb
Sugar, granulated	100-lb bag	100-lb bag	19.75	____ per lb
Tomatoes	#10 can	6 cans	11.80	____ per can
Tomato puree	#10 can	6 cans	10.70	____ per can
Veal leg, boned	1 lb		1.73	

ASSIGNMENT B:

Fill in the missing amounts on cards #1 through #10 and compute the cost per portion of each item. (For all liquids, assume that 1 lb. equals 1 pint.)

(1) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Spaghetti sauce
Yield: 150
Portion Size: 6-oz ladle

Ingredients	Quantity	Market Price	Extension
Oil, salad	3 pints		
Onions	3 lbs		
Tomatoes	8 #10 cans		
Tomato Puree	1 #10 can		
Parsley	1 cup	. . . . .	.22
Parmesan cheese	2 lbs		
Basil	4 T	. . . . .	.10
Sugar	1 cup		
Garlic powder	4 t	. . . . .	.08
Beef base	1 cup		
		Total cost	
Date prices computed:		Cost per portion	

(2) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Meatballs
Yield: 150 meatballs
Portion Size: 2 2-oz meatballs

Ingredients	Quantity	Market Price	Extension
Ground beef	30 lbs		
Bread crumbs	3 lbs		
Eggs	16		
Milk	3 cups		
Garlic powder	2 t	. . . . .	.04
Onions, minced	1 lb		
Parmesan cheese	2 cups (½ lb)		
		Total cost	
Date prices computed:		Cost per portion	

(3) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Peach crisp
Yield: 50
Portion Size: 4-oz serving

Ingredients	Quantity	Market Price	Extension
Brown sugar	2 lbs		
Flour	2 lbs		
Butter	1½ lbs		
Peaches	2 #10 cans		
Ginger	4 t	. . . . .	.05
Almond extract	4 t		
		Total cost	
Date prices computed:		Cost per portion	

(4) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Beef Rouladen
Yield: 20 portions
Portion Size: 2 2-oz rolls

Ingredients	Quantity	Market Price	Extension
Bottom round	5 lbs		
Bacon	1 lb		
Ham	½ lb		
Hamburger	¼ lb		
Onion, chopped	1 cup (6oz weight)		
Eggs	4		
Bread crumbs, dry	1½ pt (14 oz)		
Sweet pickles	20		
Red wine	1 cup	. . . . .	.25
Tomato puree	1 cup		
Brown sauce	2 qts	. . . . .	.45
Garlic	3 cloves	. . . . .	.10
		Total cost	
Date prices computed:		Cost per portion	

(5) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Chicken-noodle soup
Yield: 50
Portion Size: 6 – 7-oz

Ingredients	Quantity	Market Price	Extension
Celery	1 stalk		
Onions	1½ lb		
Carrots, raw	2 lbs	.19/lb	
Chicken base	¾ lb		
Noodles	1½ lbs		
Oil, salad	4 oz		
Water	3 gals		
		Total cost	
Date prices computed:		Cost per portion	

(6) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Arroz con pollo
Yield: 4 portions
Portion Size: ½ chicken

Ingredients	Quantity	Market Price	Extension
Broiler or fryer	2 2-lb chickens		
Olive oil	1/3 cup		
Onions	1 (1/3 lb)		
Green pepper	1 medium		
Garlic	1 clove	......	.03
Chicken stock (from base)	12 oz	......	.20
Raw rice	1 cup (½ lb)		
Tomatoes, canned	1 pint		
Pimentos	½ can		
Saffron	1/8 t	......	.05
Peas	4 oz		
		Total cost	
Date prices computed:		Cost per portion	

(7) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Lobster Newburg
Yield: 48 portions
Portion Size: 4 oz

Ingredients	Quantity	Market Price	Extension
Cooked lobster meat	12 lbs		
Butter	1 lb		
Paprika	3 T	. . . . .	.05
Dry sherry	6 oz	. . . . .	.40
Lemon juice	1 lemon		
Medium cream sauce	2 gal	1.95 per gal	
Salt and pepper	to taste		
		Total cost	
Date prices computed:		Cost per portion	

(8) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Minestrone soup
Yield: 50
Portion Size: 4-oz ladle

Ingredients	Quantity	Market Price	Extension
Beef base	¾ lb		
Oil	1 cup		
Onions	1 lb 8 oz		
Celery	1 lb	. . . . .	.20
Carrots	1 lb	. . . . .	.15
Peppers	2 med		
Cabbage	1 lb	. . . . .	.24
Garlic powder	1 t	. . . . .	.02
Tomatoes	1 qt		
Basil	1 t	. . . . .	.01
Parmesan cheese	1 c (4oz weight)		
Parsley	2 t	. . . .	.02
Kidney beans	½ #10 can		
String beans	½ #10 can		
Water	2 ½ gal		
		Total cost	
Date prices computed:		Cost per portion	

(9) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Veal scalloppine
Yield: 6 portions
Portion Size: 4 oz

Ingredients	Quantity	Market Price	Extension
Veal, leg, boneless	1½ lb		
Salt and pepper	to taste	. . . . . .	——
Flour	as needed	. . . . . .	——
Butter	3 oz		
Marsala wine	½ c	. . . . . .	.15
Lemon juice	½ lemon		
Brown sauce	½ c	. . . . . .	.03
Mushrooms	½ lb		
		Total cost	
Date prices computed:		Cost per portion	

(10) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Pumpkin pie filling
Yield: 4 10" pies
Portion Size: 8 per pie

Ingredients	Quantity	Market Price	Extension
Brown sugar	10 oz		
White sugar	10 oz		
Cinnamon	4 t	. . . . . .	.07
Corn starch	1 oz		
Ginger	2¼ t	. . . . . .	.04
Salt	2½ t	. . . . . .	.01
Pumpkin	4 lbs 2 oz	.12/lb	
Eggs	2 cups	.53/lb	
Milk	1¼ qts		
Molasses	¼ c	. . . . . .	.15
		Total cost	
Date prices computed:		Cost per portion	

Assignment C:
Complete the unit price for each item in the chart below.

Bakeshop Ingredients Price List

Item	Amount Purchased	Price	Unit Price
Apple filling	#10 can (7 lb) (6 to a case)	$21.84	____ per lb
Baking powder	10-lb can	3.75	____ per oz
Baking soda	24 1-lb cans	6.54	____ per oz
Chocolate chips	10-lb box	16.50	____ per lb
Cinnamon	5-lb box	15.00	____ per oz
Cocoa	2 10-lb boxes	12.00	____ per lb
Eggs, fresh whole	30-lb can	15.90	____ per lb
Eggs, frozen	30-lb can	17.40	____ per lb
Egg whites	10-lb can	3.80	____ per lb
Flavor	1-gal jug	2.95	____ per oz
Flour, bread or patent	100-lb bag	14.80	____ per lb
Flour, clear	100-lb bag	14.50	____ per lb
Flour, high-gluten	100-lb bag	15.65	____ per lb
Flour, pastry	100-lb bag	16.75	____ per lb
Flour, silk-tex	100-lb bag	15.25	____ per lb
Margarine	50-lb cube	16.50	____ per lb
Milk, non-fat dry powder	50-lb bag	35.60	____ per lb
Puff Do	30-lb box	19.50	____ per lb
Salt	100-lb bag	5.00	____ per lb
Shortening, high-ratio	50-lb cube	33.00	____ per lb
Shortening, Nutex (liquid)	5-qt cans (Case of 6)	38.80	____ per qt
Shortening, regular	50-lb cube	32.50	____ per lb
Sugar, brown	100-lb bag	30.70	____ per lb
Sugar, confectionery (6X)	100-lb bag	20.75	____ per lb
Sugar, granulated	100-lb bag	19.75	____ per lb
Vanilla (imitation)	1-gal jug	4.25	____ per oz
Yeast	1-lb block	.35	____ per lb

ASSIGNMENT D:

Using the table on the previous page, fill in the missing amounts on cards #11 through #20 and compute the cost per portion of each item.

(11) **STANDARD RECIPE COST CONTROL FORM**

Recipe Item: Spritz cookies
Yield: 12 lbs – 280 cookies
Portion Size:

Ingredients	Quantity	Market Price	Extension
Granulated sugar	2 lbs		
Shortening	5 lbs		
Salt	1 oz		
Egg whites	1 lb		
Vanilla	1 oz		
Patent flour	5 lbs		
		Total cost	
Date prices computed:		Cost per pound	

(12) **STANDARD RECIPE COST CONTROL FORM**

Recipe Item: White bread
Yield: 24
Portion Size: 14 oz

Ingredients	Quantity	Market Price	Extension
Salt	4 oz		
Granulated sugar	1 lb		
Milk powder	1 lb		
Regular shortening	1 lb		
Cold water	8 lbs		
Yeast	1 lb		
Patent flour	15 lbs		
		Total cost	
Date prices computed:		Cost per loaf	

(13)

STANDARD RECIPE COST CONTROL FORM		Recipe Item: Puff pastry Yield: 18 lbs – 115 pieces Portion Size: 2½ oz	
Ingredients	Quantity	Market Price	Extension
Bread flour	10 lbs		
Salt	2 oz		
Water	6 lbs		
Puff-Do	5 lbs		
		Total cost	
Date prices computed:		Cost per piece	

(14)

STANDARD RECIPE COST CONTROL FORM		Recipe Item: Gingerbread Yield: 21 lbs – 134 pieces Portion Size: 2½ oz	
Ingredients	Quantity	Market Price	Extension
Brown sugar	3 lbs		
Granulated sugar	3 lbs		
Margarine	3 lbs		
Spices (Use cinnamon)	2¾ oz		
Baking soda	½ oz		
Whole eggs, frozen	1 lb		
Pastry flour	10 lbs		
Baking powder	2½ oz		
Water	1 lb		
		Total cost	
Date prices computed:		Cost per piece	

(15) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Topping for Sour-Cream loaf
Yield: 20 toppings
Portion Size: ¼ lb.

Ingredients	Quantity	Market Price	Extension
Granulated sugar	3 lbs		
Water	1 lb		
Chocolate chips	1 lb		
Cinnamon	1 oz		
Cocoa	1 oz		
		Total cost	
Date prices computed:		Cost per topping:	

(16) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Pizza Dough
Yield: 8 pies
Portion Size: 9 oz

Ingredients	Quantity	Market Price	Extension
High-gluten flour	3 lbs		
Water	8 oz		
Yeast	3 oz		
Granulated sugar	6 oz		
Regular shortening	7 oz		
		Total cost	
Date prices computed:		Cost per pie:	

(17)

STANDARD RECIPE COST CONTROL FORM

Recipe Item: Butter cream
Yield: 30 lbs
Portion Size:

Ingredients	Quantity	Market Price	Extension
High-ratio shortening	5 lbs		
Salt	2 oz		
Milk powder	1 lb 4 oz		
Water	3 lbs 8 oz		
Vanilla	1 oz		
Confectionery sugar	20 lbs		
		Total cost	
Date prices computed:		Cost per pound:	

(18)

STANDARD RECIPE COST CONTROL FORM

Recipe Item: Bun dough
Yield: 35 lbs – 280 pieces
Portion Size: 2 oz

Ingredients	Quantity	Market Price	Extension
Sugar	4 lbs		
Salt	4 oz		
Margarine	4 lbs		
Patent flour	12 lbs		
Pastry flour	6 lbs		
Dry milk	1 lb		
Whole eggs, fresh	3 lbs		
Yeast	2 lbs		
Flavor	1 oz		
Water	8 lbs		
		Total cost	
Date prices computed:		Cost per piece:	

(19) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Windsor cake
Yield: 78
Portion Size: 7" cake

Ingredients	Quantity	Market Price	Extension
Cake flour (High-gluten)	10 lbs		
Nutex shortening	7 lbs		
Granulated sugar	12 lbs 8 oz		
Salt	6 oz		
Baking powder	10 oz		
Milk powder	14 oz		
Whole eggs, fresh	9 lbs		
Flavor	6 oz		
Water	4 lbs 10 oz		
		Total cost	
Date prices computed:		Cost per cake:	

(20) STANDARD RECIPE COST CONTROL FORM

Recipe Item: Pie crust
Yield: 120 single crusts
Portion Size:

Ingredients	Quantity	Market Price	Extension
Pastry flour	10 lbs		
Regular shortening	7 lbs		
Cold water	3 lbs 8 oz		
Salt	5¾ oz		
		Total cost	
Date prices computed:		Cost per crust	

Lesson 1 Making Change

Objectives: You will learn the importance of giving out the correct change.
You will practice giving out change.
You will learn how to use the cash register.

Related Information:

Depending upon the size of the restaurant, you may find yourself in the position of having to operate the cash register; you may also give change to customers as a waiter or waitress. In a previous unit you practiced filling out a guest check. Some waiters are required to fill out the guest check, and in some cases they take the money to the register for the customer.

THE CASH REGISTER

The cash register provides safe storage for money taken in, as it can be locked. It also, if used properly, keeps the money sorted in proper denominations (dollar bills, five-dollar bills, 10-dollar bills, nickels, dimes, etc.) making it easy to make change.

Through use of a tape, the cash register keeps a record of the cash received and paid out. Money is generally not left overnight in the register, even though it can be locked.

A register report is generally filled out. It records all the money placed into the register in the morning. At the end of the day a total is made of the amount of money in the register.

Example:	Cash put into register:	$ 20.00
	Cash at the end of the day:	$500.00
	Actual cash received:	$500.00 – $20.00 = $480.00

The printed amount on the tape is compared with the actual amount in the drawer.

If the two are the same, everything is correct.

If there is more actual cash than there should be, the register is said to be *over*. The cashier probably did not pay out enough money in making change.

If there is less actual cash in the register than on the tape, the register is said to be *short*. Again an error has been made: not enough money was taken in, or too much was paid out.

To prevent errors, you must: *Know how* to operate your register properly.

Be *accurate in operating* the machine.

Be *careful in handling* the money.

An experienced operator puts the bill received on the plate in front of the register. This will prevent a customer from making an erroneous claim, and will also prevent the operator from forgetting the amount received.

When the customer is given change, state out loud the amount of the sale. Then start with the smallest denomination and count off the change until it equals the amount of the bill still visible on the register. This bill is then placed properly in the drawer.

ASSIGNMENT, Part A:

1. Write the following in words:
   a. $5.68 ______________________________
   b. $0.19 ______________________________
   c. 45¢ ______________________________
   d. $1.09 ______________________________
   e. $25.89 ______________________________
   f. $124.83 ______________________________
2. Express in figures:
   a. three hundred and seventeen ________
   b. eighteen dollars and sixty-three cents ________
   c. thirty-three dollars and six cents ________
   d. fifty-one dollars and twelve cents ________
   e. two dollars and seventy-seven cents ________
3. Change the following amounts to dollars and cents:
   a. 10 nickels = $ __.__
   b. 12 dimes = $ __.__
   c. 4 quarters = $ __.__
   d. 25 nickels = $ __.__
   e. 10 quarters = $ __.__
   f. 18 dimes = $ __.__

4. Give the proper amount of change for the following:

   a. Amount of check $2.75; amount of money given: $5.00 ________________
   b. Amount of check $3.06; amount of money given: $5.00 ________________
   c. Amount of check $1.34: amount of money given: $2.00 ________________
   d. Amount of check $4.67; amount of money given: $10.00 ________________
   e. Amount of check $12.19; amount of money given: $20.00 ________________
   f. Amount of check $8.98; amount of money given: $20.00 ________________
   g. Amount of check $ 2.78: amount of money given: $20.00 ________________
   h. Amount of check $7.54; amount of money given: $10.00 ________________
   i. Amount of check $.65; amount of money given: $1.00 ________________
   j. Amount of check $1.06; amount of money given: $2.00 ________________

ASSIGNMENT, Part B:

Example: You sold a $1.35 lunch and received $5.00 from the customer. Tell how you would give the customer change.

Always use the largest possible cash and coins when making change. Always start with the amount of the sale and give the change back starting with the lowest coin first.

The answer to the above problem would be: Say: $1.35.....1.40 (a nickel), 1.50 (a dime), 1.75 (a quarter) 2 dollars (another quarter), three, four, five dollars (three 1-dollar bills).

1. You sold a 65¢ lunch and received $1.00.
2. You sold a $1.30 lunch and received a $10.00 bill.

3. Fill out the chart on the following page. Use a check mark (✓) for each coin.

	Amount of Sale	Amount Received	Coins					Bills			
			1¢	5¢	10¢	25¢	50¢	$1	$5	$10	$20
1.	$ 1.25	$ 2.00									
2.	.77	$ 1.00									
3.	$ 2.50	$ 5.00									
4.	$ 4.07	$ 5.00									
5.	$11.75	$15.00									
6.	$11.75	$20.00									
7.	$11.75	$12.00									
8.	$ 1.98	$ 5.00									
9.	$ 6.67	$10.00									
10.	$ 5.17	$ 6.00									
11.	$23.83	$25.00									
12.	$ 4.32	$20.00									
13.	$ 3.79	$10.00									
14.	.65	$10.00									
15.	$13.33	$15.00									
16.	$12.33	$20.00									
17.	$ 9.08	$20.00									
18.	$ 8.01	$20.00									

THE CASH REGISTER REPORT FORM

The instructor will explain how to fill out the cash-register report form by projecting a transparency of the form in this book.

The BEFORE column shows the different denominations of coins and cash that were received and placed in the register when it was first opened. These are totaled up below each section, and the full total is entered below, as "Total all money in the register."

The AFTER is done the same way, listing the amounts of each coin and cash and totaling up each section. The total "before" is subtracted from the total "after" to get the "actual cash taken in" for the day.

ASSIGNMENT C:

1. Do this one with the instructor:

Before: 20 – 1¢; 20 – 5¢; 10 – 10¢; 8 – 25¢; 5 – $1.00; 1 – $5.00

After: 8 – 1¢; 36 – 5¢; 14 – 10¢; 8 – 25¢; 37 – $1.00; 13 – $5.00; 1 – $10.00

2. Do these register reports yourself:

a. Before: 20 – 1¢; 20 – 5¢; 10 – 10¢; 8 – 25¢; 5 – $1.00

After: 4 – 1¢; 9 – 5¢; 31 – 10¢; 27 – 25¢; 37 – $1.00; 13 – $5.00; 7 – $10.00

b. Before: 50 – 1¢; 40 – 5¢; 20 – 10¢; 16 – 25¢; 10 – $1.00; 2 – $5.00

After: 35 – 1¢; 12 – 5¢; 18 – 10¢; 4 – 25¢; 76 – $1.00; 4 – $5.00; 2 – $10.00; 2 – $20.00

CASH REGISTER REPORT

Name:

Date:

	BEFORE			AFTER	
Quantity	Coin	Amount	Quantity	Coin	Amount
	1¢			1¢	
	5¢			5¢	
	10¢			10¢	
	25¢			25¢	
Total of coins =			Total of coins =		

Quantity	Bills	Amount	Quantity	Bills	Amount
	$ 1.00			$ 1.00	
	$ 5.00			$ 5.00	
	$10.00			$10.00	
	$20.00			$20.00	
	Other			Other	
Total of cash			Total of cash		
Total of coins from above			Total of coins from above		
Total all money in register			Total all money in register		

Signed ____________________

Approved ____________________

Cash in register AFTER ____________

Cash in register BEFORE ____________

Actual cash taken in ____________

Reading on tape ____________

Amount short ____________

over ____________

CASH REGISTER REPORT

Name: Date:

	BEFORE			AFTER	
Quantity	Coin	Amount	Quantity	Coin	Amount
	1¢			1¢	
	5¢			5¢	
	10¢			10¢	
	25¢			25¢	
Total of coins =			Total of coins =		

Quantity	Bills	Amount	Quantity	Bills	Amount
	$ 1.00			$ 1.00	
	$ 5.00			$ 5.00	
	$10.00			$10.00	
	$20.00			$20.00	
	Other			Other	

Total of cash		Total of cash	
Total of coins from above		Total of coins from above	
Total all money in register		Total all money in register	

Cash in register AFTER ____________

Cash in register BEFORE ____________

Actual cash taken in ____________

Reading on tape ____________

Amount short ____________

over ____________

Signed ____________________

Approved ____________________

CASH REGISTER REPORT

Name:

Date:

	BEFORE			AFTER	
Quantity	Coin	Amount	Quantity	Coin	Amount
	1¢			1¢	
	5¢			5¢	
	10¢			10¢	
	25¢			25¢	
Total of coins =			Total of coins =		
Quantity	Bills	Amount	Quantity	Bills	Amount
	$ 1.00			$ 1.00	
	$ 5.00			$ 5.00	
	$10.00			$10.00	
	$20.00			$20.00	
	Other			Other	
Total of cash			Total of cash		
Total of coins from above			Total of coins from above		
Total all money in register			Total all money in register		

Signed ____________________

Approved ____________________

Cash in register AFTER ________

Cash in register BEFORE ________

Actual cash taken in ________

Reading on tape ________

Amount short ________

over ________

UNIT IV – MONEY AND DECIMALS

Lesson 2 **Reading and Writing Decimals**

Objective:: You will learn how to read and write decimals.

Related Information:

In Unit II we studied fractions. A fractions is *less than a whole thing. It is also possible to express less than a whole thing by the use of decimals.* Usually it is easier to work with decimals than with fractions – except for the simplest fractions. When we convert to the metric system, we will be using decimals most of the time. At present, your chief use for decimals will be in dealing with money.

We use the word "decimal," but what we mean is "decimal fraction." A *decimal fraction* is a fraction whose denominator is 10, 100, 1000, etc.

For example, look at the number 57.45

The 57 represents the whole number

The numbers to the *right* of the decimal point (in this case 45) mean that we have more than 57, but not enough to make 58.

We could also express the above amount this way:

$$57\frac{45}{100}$$

You must memorize the following table in order to properly read and write decimals.

One place (number) is read as *tenths:* .05 is five tenths ($\frac{5}{10}$)

Two places (numbers) is read as *hundredths:* .05 is five hundredths ($\frac{5}{100}$)

Three places (numbers) is read as *thousandths:* .005 is five thousandths ($\frac{5}{1000}$)

Four places (numbers) is read as *ten thousandths:* .0005 is five ten-thousandths ($\frac{5}{10,000}$)

How To Read Decimals:

Read the number to the left of the decimal point as you would any whole number. Follow this example:

247.89

Say "*Two hundred forty-seven...*"

Read the decimal point by saying "and":

"Two hundred forty-seven *and*..."

Read the number to the right of the decimal point normally:

"Two hundred forty-seven and *eighty-nine*..."

Complete the statement by counting the number of places to the right of the decimal point. In this case the two digits, 8 and 9, take two places. Therefore (check your chart for two places)....

You add the words "hundredths."

247.89 The complete statement:

"Two hundred forty-seven and eighty-nine hundredths."

Don't get fooled by zeros!

.09	Say the number: "*nine.*" Count the places...two.
	Complete the statement..."nine *hundredths.*"
.9	Say the number "*nine.*" Count the places...one.
	The number is "nine *tenths.*"
.909	Say the number "*nine hundred nine.*" Since there are three places, add "*thousandths.*"

Note: A zero at the *right* end of the decimal does not change the *value* of the number. But you should read it as if it were any other digit.
For example: .50 and .500 and .5000 mean the same as .5 for computation purposes,
but should be read as "fifty hundredths," "five hundred thousandths," and "five thousand ten-thousandths."

ASSIGNMENT:

A. Write the following in word form: (Use the word "and" only to show the decimal point. For example, 702.207 is read "seven hundred two and two hundred seven thousandths.")

1. .4 ____________________
2. .10 ____________________
3. .04 ____________________
4. 14 ____________________
5. 1.4 ____________________

6. .14
7. 1.14
8. 14.14
9. 104.104
10. 114.004
11. .86
12. .0009
13. 6.060
14. 60.06
15. 60.60
16. 323.002
17. 17.107
18. 21.758
19. 23.9001
20. 2,045.91

B. Write the following as decimal fractions

1. Eight tenths
2. Eight hundredths
3. Eight and eighty hundredths
4. Sixty-three and forty-nine thousandths
5. Sixteen and six thousandths
6. Five hundred seven and five tenths
7. Two and seven hundredths
8. Ninety-four thousandths
9. Eight hundred forty-seven
10. One thousand nine and eighty-four hundredths

UNIT IV – MONEY AND DECIMALS

Lesson 3 **Rounding Off Decimals**

Objectives: You will learn how to round off decimals.

Related Information:

When working with numbers we are often left with more numbers than we need for a correct and accurate answer. It is necessary to eliminate some of these numbers. For that reason we shall practice rounding off numbers again – this time decimals.

$$\begin{array}{r} \$140.68 \\ \times \quad .12 \\ \hline 28136 \\ 14068 \\ \hline \$16.8816 \end{array}$$

In the above multiplication problem our answer comes out $16.8816. The smallest coin we have is a penny. When we pay a bill, for example, we cannot pay someone $.8816. We can pay $.88 (88¢) or $.89 (89¢). The 16 must be removed for almost all purposes.

There are certain rules we must follow in rounding off decimals. They are mostly the same rules we followed in rounding off whole numbers.

In some problems you will be told how far to round off. In dealing with money, however, without being told, we normally round numbers off to the nearest cent, as explained above (to two places).

RULE A: If the digit to be dropped is 5 or more (5, 6, 7, 8, 9), *increase the number before it* by 1.

RULE B: If the digit to be dropped is 4 or less (4, 3, 2, 1, 0), *do not increase the number before it.*

Example 1: $34.652 We wish to round this amount off to the nearest cent (two decimal places). We want to drop the 2.

The 2 we wish to drop is less than 5 (rule B above), so we drop it *without* changing the 5 in front of it.

$34.65 The amount becomes $34.65

Example 2: $208.385 We wish to round off this number to the nearest cent (two decimal places).

The number to be dropped is 5. As indicated by rule A, we must add 1 to the preceding number. The 8 is therefore changed to 9.

$208.39 The amount becomes $208.39

ASSIGNMENT:

A. Find the following correct to the nearest cent:

1. $.2658 ________
2. $.09 ________
3. $1.108 ________
4. $12.2349 ________
5. $.829 ________
6. $145.032 ________
7. $6.001 ________
8. $.009 ________
9. $435.892 ________
10. $32.297 ________
11. $5.999 ________
12. $41.1278 ________
13. $1489.4549 ________
14. $32.095 ________
15. $3.9978 ________

B. Find the following correct to the nearest tenth:

1. .37 ________
2. .289 ________
3. .8 ________
4. .16 ________
5. 3.11 ________
6. 1.92 ________
7. 3.74896 ________
8. 2.38 ________
9. 5.06 ________
10. .90 ________
11. 6.975 ________
12. 2.0495 ________
13. .996 ________
14. 13.95 ________
15. 7.0499 ________

C. Find the following correct to the nearest hundredth:

1. .321 ________
2. .2048 ________
3. .289 ________
4. 4.845 ________
5. .320 ________
6. 39.15932 ________
7. 2.904 ________
8. 15.29567 ________
9. 399.7049 ________
10. 5.9965 ________
11. 3.0019 ________
12. .009 ________

D. a. What is the difference in meaning between the following numbers?

35 35.0 35.00

35 could stand for any number between 34.5 and ________

35.0 could stand for any number between 34.95 and ________

35.00 could stand for any number between 34.995 and ________

b. Which of the above three numbers is the most exact? ________

c. Which of these is the most exact number?

10.30 10.300 10.3 ________

Example 3: \$208.3845 We wish to round off this number to the nearest cent or two decimal places.

Now look at the digits after the 38. There are two: 4 and 5. *The only digit we are concerned with is the one* immediately after *the digit in the cents place.* This is a 4.. By rule B above, since it is less than 5, we drop it (and any others) without changing the preceding 8.

\$208.38 The amount becomes \$208.38.

Examples:	\$208.3845	Drop the 45.	Answer: \$208.38
	\$208.385	Drop the 5 but add 1 to the 8.	Ans: \$208.39
	\$208.3865	Drop the 65 but add 1 to the 8.	Ans: \$208.39
	\$208.38358	Drop the 358.	Ans: \$208.38

Correct to the nearest tenth means:

$.\underline{2}568$
.2 568
.3

Tenth means correct to *one place.* Underline it to help you remember. Drop all numbers except the .2, but change the .2 to .3 because the next digit is a 5.

Correct to the nearest hundredth means:

$.\underline{35}843$
.35 843
.36

Hundredth means *two* places to the right of the decimal. Underline the two places. The following digit is an 8. Therefore change the 5 in the .35 to a 6.

Correct to the nearest thousandth means:

$23.\underline{154}32$
$23.\underline{154}$ 32
23.154

Thousandth means *three* places. Underline the three places if it will help you. The following digit is a 3. Therefore the last two digits (32) are dropped.

Correct to the nearest whole number means:

$2\underline{3}.41$ Drop all numbers to the right of the decimal point. Also drop the decimal point itself.

23 The correct answer is 23.

Note: When you need an answer correct to a certain place, always give that place its digit even if it is a zero.

Example: Round off 2.97 correct to the nearest tenth.

Since the digit in the next place is a 7, you must raise the preceding digit, 9, by 1. Raising 9 by 1 gives 10. So in order to raise the 9, we have to carry the 1 to the next place. We get 3.0 as the answer. We do *not* drop the zero if we have been asked to give an answer correct to *the nearest tenth.* The zero *shows that* the answer is correct to the nearest tenth, and not to the nearest whole number.

The same number, 2.97, correct to the nearest whole number, would be simply 3.

UNIT IV – MONEY AND DECIMALS

Lesson 4 — Addition and Subtraction of Decimals

Objective: You will review the addition and subtraction of decimals.

Related Information

You have been using decimals from the first chapter in this book. Any time you work with money you have to concern yourself with decimals. The rule for addition and subtraction of decimals is simple: *The decimal points must be kept in a straight column, each one decimal point right under the other.*

Example: Add the following numbers: .189 + .905 + .45 + 34.908

```
   .189
   .905
   .45
 34.908
 ------
```

Note how the decimal points are lined up.

```
   .189
   .905
   .450
 34.908
 ------
```

It may help to keep your columns straight if you add zeros. All the numbers have 3 places except the .45. Add a 0 to make that a 3-place number also. It does not affect its value. Now add.

Example: Subtract 145.89 from 457.03

```
 457.03
-145.89
-------
```

Note how the decimal points are lined up.

Subtract as you would in any subtraction problem.

Example: Subtract .43 from 890

```
 890.
-   .43
-------
```

The 890 does not show a decimal point, but being a whole number it has the decimal point understood after the 0 in the 890. The number 890 is the same as 890. ←

```
 890.00
-   .43
-------
```

We then add two more zeros to make the numbers line up and easier to subtract.

ASSIGNMENT:

A. Arrange the following numbers in columns and add. *After you have added,* round off the answer correct to the nearest hundredth.

1. 7.026 + 4.495 + 117.02 + 65.17 ________ ________

2. 3.507 + 33.08 + 2.1 + 4.009 + 35 ________ ________

3. .005 + 105.75 + 178.2 + 143 + 110.728 ________ ________

4. $325.07 + $10.04 + $.23 + $1.45 + $1000.00 ________ ________

5. 5.0245 + .07 + 14.2003 + 4.2 ________ ________

6. $5.34 + $1.06 + $45.90 + .99 ________ ________

B. Arrange the following and subtract. *After you have subtracted,* round off your answer correct to the nearest tenth.

1. 306.6 − 32.9 ________ ________
2. 205.06 − 140 ________ ________
3. 302.09 − 215.387 ________ ________
4. 35.613 − 7.475 ________ ________
5. 78.5137 − 59.306 ________ ________

C. Add the following:

1.	2.	3.	4.
1.25	1.8	.379	24.056
57.	2.6	2.05	18.287
.32	.759	.876	.94
.18	.375	.91	7.876
48.	1.48	.8	.093

D. Subtract the following:

1.	2.	3.	4.
$101.76	$92.65	$64.57	$843.72
− 43.25	− 1.97	− 27.85	− 81.56

5.	6.	7.	8.
$587.24	$845.27	$1,276.35	$671.19
− 218.78	− .97	− 145.18	− 98.07

E. Word Problems:

1. The Acme restaurant had the following overhead expenses for the month: electricity $143.67, heat $137.50, gas $45.07, insurance $150.00, rent $900.00. What did the overhead expenses total? ________

2. The Hut restaurant placed an order for the following items: 1 cook's knife $6.95, 1 dozen serving trays at $16.80 a dozen, 1 5-qt soup tureen at $4.95, 1 ingredient bin at $46.00. What did the order total? ________

3. Howard's restaurant ordered the following items: 1 32-gallon trash can $8.95, 1 roll clear vinyl seal-wrap $6.95, 1 case sani-liners $11.05 per case, 1 tray-stand $5.75. What did the bill total? He returned the tray stand because it was defective. What was the final bill? ________ ________

4. The Steak Pub received an estimate on the following items:

2-compartment kitchen sink $145.00
1 deep-fat fryer $295.00
1 stainless-steel-top worktable $198.50
1 electric dishwasher $1,465

What was the total on the estimate? ______

F. Can you figure out why you do *not* round off figures *before* adding or subtracting them?

UNIT IV – MONEY AND DECIMALS

Lesson 5 — **Multiplication of Decimals**

Objectives: You will review the rules pertaining to multiplication of decimals.
You will understand the importance of multiplication of decimals in food service.

Related Information:

Wherever money is used, it is necessary to know how to multiply decimals. When multiplying decimals, it is *not* necessary for the decimal points to line up vertically (as it is in addition and subtraction).

Example: (a.) $\begin{array}{r} 479.84 \\ \times\ \ 8.01 \\ \hline \end{array}$ or (b.) $\begin{array}{r} 34.7984 \\ \times\ \ \ \ \ 8.5 \\ \hline \end{array}$

Step 1: Multiply as you would in any multiplication problem.

Step 2: Count the total number of decimal places in the numbers being multiplied.

In example (a) above, there are two decimal places in the first number (.84); there are two decimal places in the second number also (.01). Two places plus two places equals four places. Our answer then will have to have four decimal places.

$$\begin{array}{r} 479.84 \\ \times\ \ 8.01 \\ \hline 47984 \\ 3838720 \\ \hline 3843_{\wedge}5184 \end{array}$$

Count four places from the right and put in the decimal point.

In (b) above, without even multiplying, we can see that we will have to count five places from the right in our answer to place the decimal point.

We can expect that almost everyone will own one of the mini-computers in the near future, making all math work easier. Even with computers, however, we must know how to set up the problems and how to interpret the answers. Many restaurants provide waitresses with adding machines to make their work easier, faster, and more accurate.

Note: We call the first number the multiplicand: 2.45
and the second number the multiplier: × 2.4
and the answer is called the product: 5.880

When numbers are to be multiplied, it does not matter which one you make the multiplier and which the multiplicand: 3 × 2 is the same as 2 × 3. It is usually easier to multiply by the smaller number in problems such as the ones in part A of the assignment.

ASSIGNMENT:

A. Multiply the following:

1. 909.50 X 73 ________

2. 45.3 X 2.4 ________

3. 804.3 X .7 ________

4. .0075 X 4.23 ________

5. .24 X 78.5 ________

6. $300.45 X 36 ________

B. Complete the following:

1. 5.724 X 28 ________

2. 847.3 X .46 ________

3. .083 X 1.54 ________

4. 5.042 X 8.1 ________

5. Two scales were ordered at $13.50 a scale. What was the total cost? ________

6. What did the bill come to if fiberglass trays cost $19.80 a dozen and twelve dozen were ordered? ________

7. What is the cost of 5 plastic washing machine racks at $11.95 a rack? ________

8. Condiment holders with a gold finish cost $2.40 each. How much would it cost the cafeteria to order one for each table? There are 28 tables. ________

9. What would it cost to replace all the seats in the cafeteria if one fiberglass stack chair costs $11.95? There are 224 seats in the cafeteria. ________

10. WAGE PROBLEMS. Find the gross pay for:

a. 40 hours at $2.20 per hour ________

b. 40 hours at $2.45 per hour ________

c. 36 hours at $1.95 per hour ________

d. 30 hours at $3.40 per hour ________

e. 15 hours at $2.60 per hour ________

11. COMPUTING COSTS:

Sometimes costs per portion of an item are very small. These must still be calculated because, when making hundreds of portions, they "add up." After completing the multiplication of the following problems, don't forget to round off to two places. We usually consider costs to the nearest whole cent.

a. 17 servings at 0.125 per serving ________

b. 150 pork chops at .6375 per serving ________

c. 50 bowls of soup at .0572 per serving ________

d. 74 portions of pie at 0.183 per piece ________

e. 200 portions at .855 per portion ________

f. 350 portions at $1.245 per portion ________

g. 75 portions at .65 per portion ________

Lesson 6 Inventory and Stock Record Card

Objective: You will practice filling in two forms used in the foods trade – the inventory list and the stock record card.

Related Information:

Keeping a proper inventory is a necessary part of the management of any food-service establishment. An inventory is a list of all the items on hand. The inventory may involve every single item in the restaurant – chairs, tables, ovens, food, etc., but we are interested here in the inventory of stores only.

The cook must have the necessary supplies on hand when he or she prepares the food. The cook must depend on the storeroom's having certain items in stock all the time. Other items he knows he must order for special occasions such as banquets, parties, or holiday occasions.

The inventory may be done DAILY, WEEKLY, SEMIMONTHLY, or MONTHLY. A *perpetual inventory* means that every time an item is put into stores or taken out, it is recorded or an adjustment is made on an inventory card or sheet.

The month-end inventory is most important. Food costs cannot be accurately calculated without accurate inventories on what is *actually* used each month.

ASSIGNMENT A:

On the next page is an example of part of an inventory taken by a worker in a restaurant. Following the instructions given, find the unit price of each food and the extension.

To find the "extension" –

If 6 cans of potato granules cost $11.64, find the price of 1 can by dividing 6 into $11.64. This gives you the *unit* price.

Multiply the unit price by the quantity on the shelf – 7 cans – to find the extension.

Add all the extensions to find the grand total of all items.

(B) Assuming 25 portions per No. 10 can on the desserts (fruits), are we able to feed 300 students with each item? If not, which one(s) are we short of?

____

INVENTORY

DATE TAKEN ____________ Page # ____________

INVENTORY BY

Qty.	Description			Price Per Package		Unit Price	Extension
	Size	Food	Packed				
7	#10 can	Potato granules	6	11	64	1.94	13.58
7	#10 can	Pork and beans	6	8	19		
12	3 lb	Peanut butter	6	12	80		
4	66 oz	Solid light tuna	6	32	74		
8	#10 can	Catsup	6	10	93		
8	#10 can	Peas	6	7	95		
2	#10 can	Mixed Vegetables	6	8	38		
3	#10 can	Cut wax beans	6	8	00		
8	#10 can	Potatoes	6	7	70		
4	#10 can	Peaches	6	11	83		
13	#10 can	Fruit mix	6	12	27		
17	#10 can	Sauerkraut	6	6	67		
5	#10 can	Pear halves	6	12	66		
5	#10 can	Chow mein noodles	6	6	63		
6	#10 can	Cherry filling	6	17	05		
17	1 lb can	Mushrooms	24	27	87		
22	21 oz	Ajax	30	5	55		
						Total this page	

STOCK RECORD CARD

The stock record card is useful in checking and controlling inventories in the storeroom. In large storerooms it is useful because:

1. It indicates the LOCATION of the food items.
2. It indicates the SIZE of the item: #10 can, or #5 can, etc.
3. HIGH LIMIT and LOW LIMIT: This gives the storeroom attendant, manager, or purchasing agent an idea of how many to order. He knows he must not go over the high limit; he knows that when the number of items on the shelf gets down to the low limit, he must order.
4. DATE: self-explanatory
5. REC'D: the number of items put into stores.
6. ISSUED: the number of items given over to the kitchen. This gives the manager an idea as to how much to keep on hand by knowing how often the item is called for.
7. BALANCE: the number of items remaining on a particular date.

A card like this requires close storeroom control. The card is useless unless each time an item is received or checked out it is recorded. Control like this would be necessary in large restaurants, dining rooms in hospitals, etc.

ASSIGNMENT C:

Make the proper entries on the STOCK RECORD CARD on the following page.

Item: Sweet peas, #10 cans, which are kept on shelf 2A. The stock is permitted to vary between 6 cans and 15 cans.

On May 1 we had 3 cans on the shelf

On May 2 we received 2 cases. During the day we issued 2 cans to the cook.

On May 4 we issued 2 cans to the cook.

On May 5 we issued 2 cans to the cook.

Is it time to reorder peas yet?

Stock Record Card for Inventory Control

STOCK RECORD CARD				Item:			
Location:			Size	High Limit		Low Limit	
Date	Rec'd	Issued	Balance	Date	Rec'd	Issued	Balance

Lesson 7 — Division of Decimals

Objectives: You will review the division of decimals.
You will practice using division in food-related problems.

Related Information:

There are three general types of problems involving the division of decimals

1. Dividing a whole number into a decimal: $8\overline{)7.89}$
2. Dividing a decimal into a whole number: $8.8\overline{)4578}$
3. Dividing a decimal into a decimal: $8.8\overline{)234.866}$

BASIC RULE:

If there is a decimal point in the divisor (the number outside the box), move it to the right of the last digit and count the number of places you are moving it. Then move the decimal point *inside* the box *the same number of places.*

Example 1:	$8\overline{)7.89}$	Rule does not apply – there is no decimal point in the divisor.
Example 2:	$8\underset{\curvearrowright}{.8}\overline{)234\underset{\curvearrowright}{.8}66}$	Move point in the divisor one place to the right; then do the same thing to the number inside the box.
Example 3:	$\underset{\curvearrowright}{.880}\overline{)234\underset{\curvearrowright}{.866}}$	Move point in the divisor three places to the right; then do the same thing to the number inside the box.

If there is no decimal point in the number inside the box, add a decimal point at the end and as many zeros as necessary to permit moving the decimal point as many places as needed.

Example 4:	$8.8\overline{)4578}$	No decimal inside the box.
	$8.8\overline{)4578.0}$	Since we must move the decimal point in the divisor one place, add a decimal point and one zero inside the box. This does not change the value of the number.
	$88\overline{)45780.}$	Now move decimal point in the divisor and move decimal point inside box, as in example 2 above.
Example 5:	$8.90\overline{)234}$	No decimal inside box.
	$8.90\overline{)234.00}$	Add a point and two zeros inside box.
	$890\overline{)23400.}$	Move both decimal points

In all these problems, we must complete the preliminaries by putting in a decimal point for the answer. It is placed *directly above* the decimal point inside the box.

(Ex.1) $8\overline{)7\underset{\uparrow}{\dot{.}}89}$ *(Ex.2)* $88\overline{)2348\underset{\uparrow}{\dot{.}}66}$ *(Ex.3)* $880\overline{)234866\underset{\uparrow}{\dot{.}}}$ *(Ex.4)* $88\overline{)45780\underset{\uparrow}{\dot{.}}}$ *(Ex.5)* $890\overline{)23400\underset{\uparrow}{\dot{.}}}$

Now divide as you would in any other division problem. Carry out your division to the same number of decimal places *above* the line as there are decimal places *below* the line. Then look to see whether the *next* digit would be 5 or more. If so, increase your last digit by 1.

When dealing with *money amounts,* always carry out the division to 2 places beyond the decimal point. Then go a step further to see what the next digit will be, so you can round off your answer properly.

ASSIGNMENT:

1. There are approximately 25 servings in a #10 can. Work the following problems:

   a. $45.90 divided by 25 __________

   b. $4.55 divided by 25 __________

   c. $7.50 divided by 25 __________

   d. $1.25 divided by 25 __________

   e. $2.50 divided by 25 __________

   f. $4.00 divided by 25 __________

   g. $4.75 divided by 25 __________

   h. $7.40 divided by 25 __________

   i. $8.88 divided by 25 __________

   j. $14.80 divided by 25 __________

   k. $24.49 divided by 25 __________

   l. $37.12 divided by 25 __________

2. a. $23.18 divided by 12 __________

   b. $14.07 divided by 6 __________

   c. $8.72 divided by 50 __________

   d. $18.97 divided by 15 __________

   e. $40.89 divided by 12 __________

   f. $2.37 divided by 100 __________

   g. $27.35 divided by 18 __________

   h. $89.09 divided by 22 __________

3. a. 82.50 divided by 1.25 __________

   b. 1.44 divided by 3.7 __________

   c. .45 divided by 15 __________

   d. 1.7243 divided by .43 __________

   e. 580.5 divided by 21.5 __________

   f. 82.614 divided by .028 __________

4. Compute the cost per serving based on the total recipe costs given:

   a. 30 portions, $4.00 __________

   b. 35 portions; $35.75 __________

   c. 20 portions; $9.309 __________

   d. 35 portions; $14.00 __________

e. 50 portions; $85.00 ______

f. 12 portions; $0.6552 ______

5. Compute the cost per serving, assuming 25 servings per #10 can.

   a. Number 10 cans of peaches cost $10.91 per case of 6. What is the cost per can? What is the cost per serving? ______ ______

   b. One case of plums costs $10.59. What is the cost per can? What is the cost per serving? ______ ______

   c. One case of apricots costs $14.61. What is the cost per can? What is the cost per serving? ______ ______

   d. Two cases of cherries cost $21.48. What is the cost per can? What is the cost per serving? ______ ______

6. At $9.20 per dozen, what is the cost of one 11" oval platter? ______

7. Heavy-weight 6¾-oz. cups come packed in cartons of 4 dozen. They cost $6.30 per dozen. How much does a carton cost? How much are they per cup? ______ ______

8. Large dinner plates, 10", cost $10.80 a dozen and come packed two dozen to the carton. How much is a carton? One plate? ______ ______

Lesson 8 The Requisition

Objective: You will learn to fill out a simple requisition form.

Related Information:

You may someday be in a position where you have to order supplies. Some institutions have open orders on food items, where all you have to do is call up and order over the phone. In some restaurants the person in charge of the storeroom keeps a regular inventory, and orders as required.

Where equipment is involved, procedures may vary. In a small restaurant the boss may approve a purchase in a matter of minutes and leave the rest up to you. In some businesses, orders may have to go through many channels before being approved for purchase. Sometimes it is necessary to order equipment a year in advance, as in schools.

No matter what method your own business uses, you should know how to fill out a simple requisition form. A sample form is shown on the next page.

Requisition for ordering supplies outside of restaurant.

PURCHASE REQUISITION
TO: PURCHASING DEPARTMENT. Please order the following:

Vendor:	No.

Date Ordered	Terms	F.O.B.	Ship via	Date Promised	Quotation Number

QUANTITY	PART NO.	DESCRIPTION AND MANUFACTURER		UNIT PRICE	TOTAL PRICE
			Date of requisition	Date required	

Required for:	Requisitioned by:	Approved by:		

The first five lines are usually taken care of by the purchasing department. It may have to shop around to get the items:

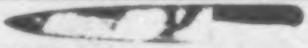
a. at the best price
b. delivered promptly
c. from a dependable supplier

1. QUANTITY: The number of items you want.
2. PART NO: Manufacturers catalog no.
3. DESCRIPTION AND MANUFACTURER: Tell what it is you are ordering and what manufacturer you are referring to.
4. UNIT PRICE: How much one item costs.
5. Required for: What department (or reason).
6. Requisitioned by: Who is ordering the part.
7. Date of requisition: Today's date
8. Date required: When you need it.

QUALITY PROFESSIONAL CUTLERY

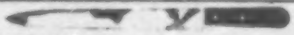
COOKS' KNIVES: Chrome Tool Steel, flexible, forged blade & bolster, Rosewood Handle. Finest made.

#60766-8, 8" blade .... $ 5.25 ea.
#60766-10, 10" blade .... $ 6.55 ea.
#60766-12, 12" blade .... $ 8.00 ea.
#60766-14, 14" blade .... $ 9.65 ea.



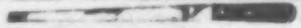
COOKS' KNIVES: Carbon Steel, stiff blade, Ebonwood handle.

#61166-8, 8" blade .... $ 2.65 ea.
#61166-10, 10" blade .... $ 3.10 ea.
#61166-12, 12" blade .... $ 3.75 ea.
#61166-14, 14" blade .... $ 4.70 ea.



MEAT SLICERS: Flexible Blade, Rosewood Handle.

	No. 6545 Stainless Steel
No. 6545 – 8" blade........	$ 2.65 ea.
No. 6545 – 10" blade........	$ 3.75 ea.
No. 6545 – 12" blade........	$ 4.10 ea.



HAM SLICERS: Stainless Steel Flexible Blade, Rosewood Handle.

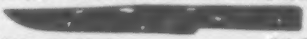
#6503-10, 10" blade .... $ 3.65 ea.
#6503-12, 12" blade .... $ 4.10 ea.

LUNCHEON SLICER: Stainless Steel, Rosewood Handle.

#6546, 8" blade .... $ 2.55 ea.

BREAD KNIVES: Serrated Stainless Steel. Rosewood Handle.

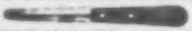
#6549, 9" blade .... $ 3.10 ea.



#BBK8, 8" blade .... $ 1.55 ea.
#BBK9, 9" blade .... $ 1.85 ea.

UTILITY KNIFE: Serrated Blade, Wonderful for slicing tomatoes, rolls etc.

#RUK-5 5" Wave-Cut Blade .... $ .90 ea.

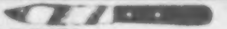


GRAPEFRUIT KNIVES: 3½" blade. Stainless Steel, Double Serrated.

#EGK-3, Household Type .... $ .45 ea.
#BGK-3, Restaurant Type .... $ .80 ea.
#65-12, Hotel Type .... $ 1.70 ea.

UTILITY KNIVES: Stainless Steel, Rosewood Handle.

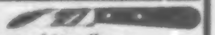
#6515, 6" Blade .... $ 1.70 ea.



PARING KNIVES:
Stainless Steel, Rosewood Handle.

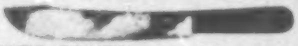
#JPK-3, 3" blade, economy ...... $ .25 ea.
#BPK-3S, 3" serrated blade ...... $ .50 ea.
#RPK-3, 3¼" blade, standard ...... $ .50 ea.
#RPK-3B, 3¼" with bolster ...... $ .55 ea.
#65-19, 3¼" professional ...... $ .95 ea.

PARING KNIVES:



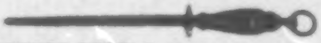
Stainless Steel, Rosewood Handle

#65-20, 3¼" blade .... $ .95 ea.
#65-16, 3¾" blade .... $1.35 ea.



BUTCHER KNIVES: Chrome Tool Steel Blade

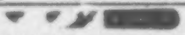
#6280-8, 8" blade .... $ 3.00 ea.
#6280-10, 10" blade .... $ 3.65 ea.
#6280-12 12" blade .... $ 4.40 ea.



BUTCHER STEELS: (Knife Sharpeners) Carbon Steel, forged, magnetized.

#157, Knurled blade, Maple Handle
#6570, Straight cut blade, Rosewood Handle.

No. 157 Maple Handle	Blade Size	No. 6570 Rosewood Handle
$ 2.80 ea.	10"	----------
$ 3.05 ea.	12"	$ 5.15 ea.
$ 3.60 ea.	14"	$ 5.45 ea.
$ 4.30 ea.	16"	----------

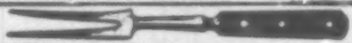


BONING KNIVES: 6" wide blade.

#RBK-04, Carbon Steel .... $ .95 ea.
#6280-6, Chrome Tool Steel .... $ 2.05 ea.

BONING KNIVES: 6" Narrow blade.

#6280N-6, Chrome Tool Steel .... $ 2.05 ea.

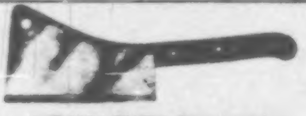


COOKS' FORKS: Heavy duty, Forged Carbon Steel, Extra-heavy construction. 14" Size also available in Stainless Steel.

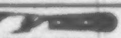
Rosewood Handle		Overall	Maple Handle	
#67B	$ 4.20 ea.	12"	#87B	$ 3.55 ea.
#69B	$ 5.00 ea.	14"	#89B	$ 4.05 ea.
#611B	$ 8.20 ea.	17"		
#659B	$ 8.25 ea.	14"	Stainless Steel.	

FORKS: Utility, Kitchen, Pot.

NO.	Overall	Tines	PRICE
#RUF-10	10"	Stainless	$ .95 ea.
#RUF-13	13"	Stainless	$ 1.35 ea.
#770-L	20½"	Carbon Steel	$ 3.10 ea.

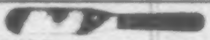


HEAVY DUTY CLEAVERS
No.L–85, 7" blade $ 3.80 ea.
No.L828, 8" blade $ 6.10 ea.
Chicken CLEAVER, light duty
No.RCC–7 6" blade $ 1.70 ea.



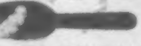
SANDWICH SPREADER:
Stainless Steel Blade, 3½" x 1¼"

#65-08, Commercial .... $ 1.45 ea.
#WSS-4, Economy .... $ .55 ea.



ICING KNIFE: 6½" x 1½" Stainless Steel Blade, Rosewood Handle. Best Quality.

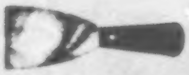
#65-04 .... $ 2.40 ea.



PIE SERVER: 6" x 2½" Offset Stainless Steel Blade. Rosewood Handle. Best Quality.

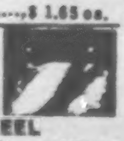
KT–27 .... $ 1.40 ea.
6509B, Deluxe Model ... $ 2.55 ea.
SPS–10, all stainless.. $ .85 ea.

PAN SCRAPER:



3"x4" SS blade
Please Specify:
S-117S, Stiff blade
S-117F, Flexible blade ....$ 1.65 ea.

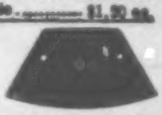
BAKERS' SCRAPERS



Carbon Steel 6" x 3" Blade
#12 Semi-Flexible .... $ 1.20 ea.
#6E Flexible .... $ 1.80 ea.

NEW...ALL STAINLESS STEEL
#BAK-4 4-1/8" x 3¼" Stiff Blade....... $1.25 ea.
BAK-6 6" x 3¼" Stiff Blade....... $1.30 ea.

BOWL SCRAPERS:

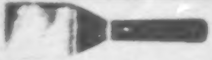


Heavy Rubber Blade,
Maple Handle.

#8R, 8" x 2¼" blade .... $ 2.55 (24

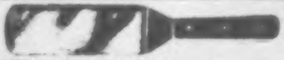
SPATULAS: Flexible Stainless Steel Blade.

NO.	BLADE SIZE	PRICE
#BK-03	3" x 11/16"	$ .80 ea.
#BK-04	4" x 3/4"	$1.05 ea.
#BK-05	5" x 13/16"	$1.15 ea.
#6501-6	6" x 1"	$1.55 ea.
#6501-8	8" x 1-1/4"	$2.35 ea.
#6501-10	10" x 1-1/2"	$3.15 ea.
#6501-12	12" x 1-3/4"	$4.65 ea.
#6501-14	14" x 2"	$6.20 ea.



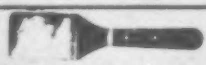
TURNERS: Stainless Steel Offset Blade. Rosewood Handle. Sizes shown are for flat surface of blade.

#255, Stiff blade, heavy duty
#491, Small, semi flexible
#255, 4" x 3" blade .... $ 1.50 ea.
#491, 3" x 2" blade .... $ 1.05 ea.



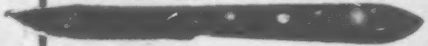
TURNERS: Long Blade.
8" x 3" blade, offset, 14" overall.

#VB-80, Stainless Steel .... $ 2.25 ea.



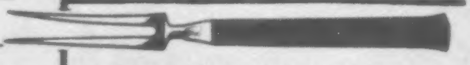
CAKE TURNER: 6" x 2½" Stainless Steel Offset Blade. Rosewood Handle.

#65-07B .... $ 2.50 ea.



PARING KNIVES #R-335

3-1/8" Stainless Steel Blade. $4
Deluxe Bolster Construction.
Rosewood Handle. Less than doz $.45 ea.



IMPORT CLOSEOUT, $5.00 Value
Forged Stainless Steel Forks
Wood Grain Plastic Handles
10-1/2" long, for Serving, Carving and general kitchen use.
No. CKF-11.............. $ 1²⁵ EA.
6 or more........ $ 1.00 ea.

ASSIGNMENT A:

Use Page 11 from the Admiral Craft Equipment catalog and the blank form below to order the following items:

1 10" Cook's knife, chrome steel
1 17" Cook's fork, heavy duty
5 3¼" professional paring knives
1 4" X 3" blade turner

Note: Use the Admiral Craft catalog numbers and make certain your description is written clearly and completely. Use prices from catalog and total the requisition.

Requisition for ordering supplies outside of restaurant.

PURCHASE REQUISITION
TO: PURCHASING DEPARTMENT. Please order the following:

Vendor:	No.

Date Ordered	Terms	F.O.B.	Ship via	Date Promised	Quotation Number

QUANTITY	PART NO.	DESCRIPTION AND MANUFACTURER	UNIT PRICE	TOTAL PRICE
			Date of requisition	Date required

Required for:	Requisitioned by:	Approved by:	

MISCELLANEOUS PLASTIC ITEMS

new

LARGE 20 OUNCE UNBREAKABLE POLYETHYLENE SUGAR & NO-DRIP SYRUP SERVERS

- BIG 20 Ounce Capacity
- Unbreakable Frost-White Container
- Colorful Tops

No. D-115 - SUGAR, 20 oz.

SAVES SUGAR – Pours only 1 Teaspoon at a time (special feature in top may be removed for regular free-flow pouring) 3" Diam., 6½" High. Frost-White Lowers, Colorful Tops.

#D-115

$4.80 In carton lots of 2 dozen ASSORTED (6 each tops in Tan, Pink, Yellow and Turquoise).

In SOLID COLOR packing (ctn. lots of 2 doz.)
Your Choice: Tan – Yellow
Pink – Turquoise or Tangerine
(with Frost-White lower containers) $5.40

In 1 dozen lots	$6.00 doz.
Less than 1 dozen	$ .55 ea.

No. D-116

NO-DRIP SERVER

For: SYRUP – MILK – CREAM – Etc. 3" Diam., 6" High. Frost-White Lowers – Colorful Tops.

$6.00 In carton lots of 2 dozen ASSORTED (6 each tops in Tan – Pink Yellow & Turquoise)

In SOLID COLOR packing (ctn. lots of 2 dozen).
Your Choice: Tan
Yellow – Pink or
Turquoise (all with Frost-White lower containers) $6.60

In 1 dozen lots	$ 7.20 doz.
Less than 1 dozen	$ .75 ea.

D-116

ADMIRAL

*NOISELESS *LIGHTWEIGHT
*UNBREAKABLE
*WON'T RUST or DENT

For:... Gasoline, Naptha, Kerosene, Solvents, Inks, Acids, Water, Food Stuffs, Drugs, Chemicals, etc.

ADMIRAL CRAFT ADCRAFT EQUIPMENT CORP.

HEAVY-DUTY JERRY JUGS

Equipped with cap, pouring spout, cap for spout, measuring cup.

No. JJ-1, 1 Gallon

$1.50 EA

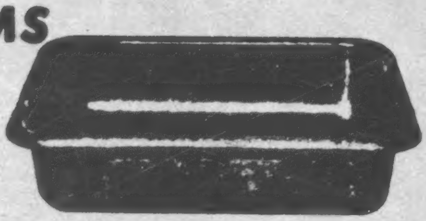
Order NOW

NO.	RATED	HOLDS	EACH	12/MORE
JJ-1	1 Gallon	5 Quarts	$1.60	$1.50 ea.
JJ-3	2½ Gallon	11 Quarts	$2.50	$2.25 ea.
JJ-5	5 Gallon	22 Quarts	$4.00	$3.75 ea.

May be assorted for quantity price schedule

(98)

HEAVY-DUTY DISH BOXES



$1.75 EA
In lots of 12 or more

POLYETHYLENE, in Tan or Dark Gray.

No. CDB-15205, 15" x 20" x 5", Reg. $3.00 ..	$2.25 ea.
In full carton lots of 12 or more	$1.75 ea.

Avocado, Gold or Gray.

No. BGB-1121
Reg. $3.95 Value

$1.75 EA
6 or more
Less than 6 ...$2.00 ea.

CUTLERY BOX, 4-Compartment
Heavy Duty Polyethylene,
Big 21½" x 11½" x 3¾" deep

HEAVY-DUTY POLYETHYLENE DISH BOXES

The most modern and durable plastic boxes you can buy. Safe in Dishwashers, Boilable, Unbreakable and Sanitary. They nest for easy storage, Fits all standard dish carts.

$1.40
72 or more

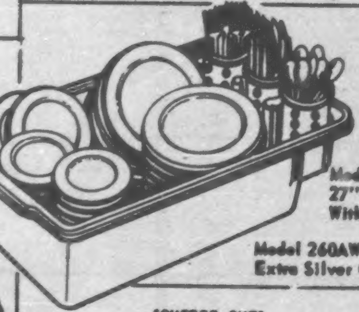
Colors: White, Tan, Gray or Red.
12 to a carton

CDB-2216
DISH BOXES
15½" x 21½"
5" high.
Reg. $4.95

Colors: White, Tan, Gray or Red

CDB-2216

Each	$2.00
12 to 35	$1.75
36 to 71	$1.50
72 or more ...	$1.40



MARLEX POLYETHYLENE "SILVER-SAVER" TOTE BOX

Holds 3 Silver Cylinders
No More Assorting Silver
Extra-Deep, Holds More
Size: 27" x 16" x 7½" deep

Model 260A Tote Box 27" x 16" x 7½" Without Cylinders $5

Model 260AW3C With Cylinders	$8.80 ea.
Extra Silver Cylinders...........	$ .95 ea.

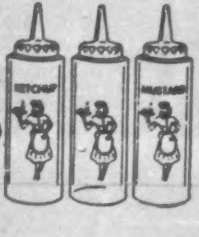
SQUEEZE-OUTS

Plastic Dispensers for: Ketchup, Mustard, and other table liquids, have an 8-ounce capacity. The Squeeze-Out dispenser features a Nev-R-Drip nozzle which regulates the flow as the user desires and also controls the contents of each dispenser so that it will not drip even when knocked over.

#PBD-1, "Mustard", Yellow
#PBD-2, "Ketchup", Red
#PBD-3, No marking, natural

$1.95

	Dozen	Less than dozen
Standard 8 oz.	$ 1.95	$ .25 ea.
Large 12 oz.	$ 3.00	$ .40 ea.



ASSIGNMENT B:

Complete the following requisition, using page 58 in the Admiral Craft Equipment catalog.

1 dozen sugar servers, turquoise-color top only
6 no-drip servers, turquoise top only
6 15" X 20" X 5" dish boxes, tan
3 dozen squeeze-outs, mustard, standard
3 dozen squeeze-outs, ketchup, standard

Total your order and put total on the requisition.

Requisition for ordering supplies outside of restaurant.

PURCHASE REQUISITION
TO: PURCHASING DEPARTMENT. Please order the following:

Vendor:	No.

Date Ordered	Terms	F.O.B.	Ship via	Date Promised	Quotation Number

QUANTITY	PART NO.	DESCRIPTION AND MANUFACTURER		UNIT PRICE	TOTAL PRICE
			Date of requisition	Date required	

Required for:	Requisitioned by:	Approved by:

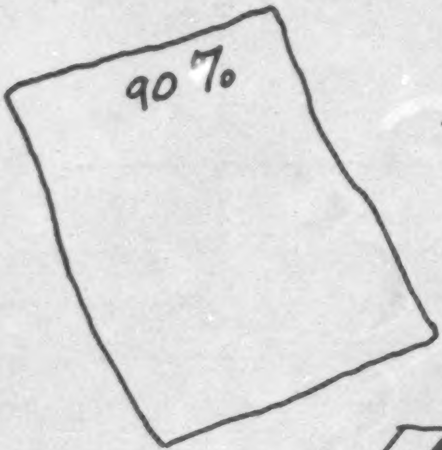
UNIT V – PERCENTAGE

Lesson 1 **Getting Reacquainted**

Objective: You will understand the meaning of percentage and know some of its uses.

Related Information:

Percent plays an extremely important role in our daily lives.



Tests are scored by percent.

Bank accounts pay interest by percent.

A YEAR FROM DAY
OF DEPOSIT

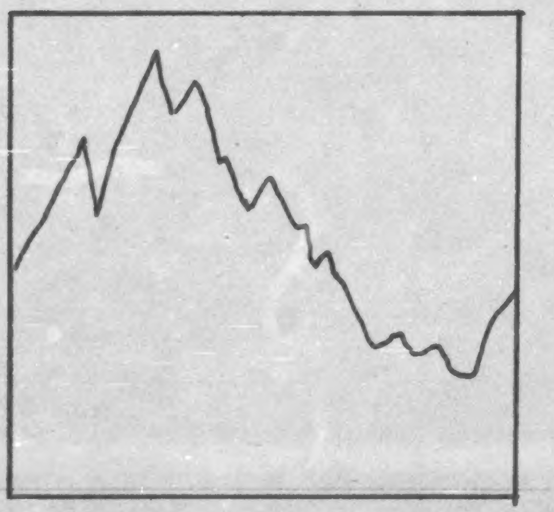
2-Year Savings Certificates:
Minimum only $500

We make loans and pay interest by percent

A waiter or waitress gets tips by percent.

We pay sales tax by percent.

Sales in stores are often quoted in percent.



Businesses state their profit or loss in percent.

It should be clear by now that percent plays an important role in our lives. Every student and worker should understand what percent means and how to do some basic percentage problems. You will be working with percents of one sort or another for your whole life.

BUT

Before we go forward......we have to go back and make sure we know how to change from fractions to decimals and to percents, and vice-versa. Without this skill we will constantly make errors while doing percentage problems.

Some things can be said in many different ways. For example, if we write the number "1" or the word "one" or the Roman numeral "I" we all understand that they mean the same thing. This is also true with fractions, decimals, and percents. They are different ways of saying the same thing.

1/2 of a pie . . . . is the same as 50% of a pie . . . . is the same as .50 (fifty-hundredths) of a pie.

Each occupation or business has its own customs and has adopted the expressions which they feel most comfortable with.

We generally say:	a 15% to 20% tip	rather than a 15/100 tip or 1/5th tip
We generally say:	1/2 pound	rather than 50% of a pound

ASSIGNMENT:

Circle the expression that you think is most commonly used:

(a)	1/4 lb.	.25 lb.	25% of a pound
(b)	$\frac{15}{100}$off list	.15 off	15% off
(c)	1/2 dollar	$.50	50% of a dollar
(d)	8/100 interest	.08 interest	8% interest
(e)	2/10 mile	.2 mile	20% of a mile
(f)	1/50 off list	.02 off	2% off
(g)	23/100 increase	.23 increase	23% increase
(h)	1/4 dollar	$.25	25% of a dollar

Lesson 2 **Percents to Decimals**

Objective: You will be able to change percents to decimal fractions.

Related Information:

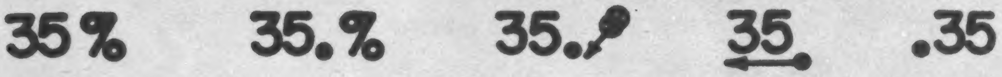
Percents are great. We see them all the time, and we even use them a lot ourselves. When the ad says: "20% off regular price," we have a pretty good idea of how much this means.

There's one big trouble with percents, however – *we cannot use them in working out problems in arithmetic.* In order to use a percent in a problem we must first convert it to an ordinary fraction or a decimal fraction that means the same thing.

TO CHANGE A PERCENT TO A DECIMAL.

MEMORIZE THIS RULE: *To change a percent to a decimal, drop the % sign and move the decimal point TWO places to the left.*

Remember – whether you see it or not, *every number has a decimal point.*



Look at the sketch above. It contains a good clue to remembering which direction to move the decimal point. Notice that the percent sign looks something like an arrow. It is indicating which direction to move.

BUT – You have to remember to move TWO places . . . always *two* places, regardless of whether the number has one, two, or three digits. You may have to insert a zero to get the two places.

Sample problems:

35% = 35.% = .35

5% = 5.% = .05

155% = 155.% = 1.55

25½% = 25.5% = .255

In order to do the last problem above, you have to know that 1/2 equals .5. We will talk about the decimal equivalents of most common fractions later.

ASSIGNMENT A:

Do the following problems. Your instructor will go over them in a few minutes. If you get them all correct, you will soon be ready for the main assignment.

1. 30% Change to a decimal: __________
2. 60% Change to a decimal: __________
3. 8% Change to a decimal: __________
4. 125% Change to a decimal: __________
5. 18½ Change to a decimal: __________
6. 6.1% __________
7. 7.85% __________
8. 8.2% __________
9. 9.2½% __________
10. 6½% __________
11. When changing from a percent to a decimal you (sometimes) (always) (never) move the decimal point two places to the left. (Circle the correct answer.)
12. When converting a percent containing a fraction, such as 5½%

First ____

Then ____

In the problems above, we sometimes found it necessary to change ½ to .5, its decimal equivalent. But suppose we had a more difficult problem – suppose we had to change $4\frac{7}{8}\%$ to its decimal equivalent. How would we do it?

First we would have to convert the $\frac{7}{8}$ to a decimal. To do that, carry out the division that is indicated by the form of the fraction:

$$\frac{7}{8} = 8\overline{)\,7}$$

We see that 8 will not go into 7. So we add a decimal point after the 7 and some zeros, and we carry out the division.

$$\begin{array}{r} .875 \\ 8\overline{)\,7.000} \\ \underline{6\,4} \\ 60 \\ \underline{56} \\ 40 \\ \underline{40} \end{array}$$

Now we know that $4\frac{7}{8}\% = 4.875\%$, and we can proceed to find its decimal equivalent.

$$4\frac{7}{8}\% = 4.875\% = \underset{\smile}{.4}.875\% = .04875$$

It would be pretty sad if, every time you saw a fraction and needed to know what percent it equaled, you had to go through the actual division. Since there are only a few common fractions that you will use often, it is not too difficult to memorize their decimal equivalents. Particularly if you use a calculator, you need to know the decimal form of a fraction, for calculators use decimals, not fractions.

Here is the table of equivalents you need to memorize.

1/2 = .5	1/8 = .125	1/3 = .333	1/5 = .2	1/10 = .1
1/4 = .25	3/8 = .375	2/3 = .667	2/5 = .4	2/10 = .2
3/4 = .75	5/8 = .625		3/5 = .6	3/10 = .3
	7/8 = .875		4/5 = .8	etc.

Now it is a simple matter to change a fractional percent to a decimal.

Example: Change 5 3/8% to a decimal.

5 3/8% (1) Change fractional part to a decimal: 3/8 to .375

5.375% (2) Substitute the .375 for the 3/8. Note: The .375 has the decimal. The % sign remains.

.05375 (3) Now move the decimal point two places and drop the percent sign.

There may be other occasions when you are working with fractions (as in addition, subtraction, multiplication, or division), when it would be easier to use their decimal equivalents. Always use the way that is easiest for you. If you forget a decimal equivalent, or have an unusual fraction for some reason, all you have to do is divide out the fraction, as we did above with 7/8. This can even be done with a calculator if you have one handy.

ASSIGNMENT B:

Change the following percents to decimals.

1. 48% ____________
2. 76% ____________
3. 19% ____________
4. 15% ____________
5. 300% ____________
6. 250% ____________
7. 6% ____________
8. 2% ____________
9. 1% ____________
10. 10% ____________
11. 45% ____________
12. 42.7% ____________
13. 39.4% ____________
14. 156.8% ____________
15. 32.6% ____________
16. 4.3% ____________
17. 5.7% ____________
18. 100% ____________
19. 8.2% ____________
20. 3½% ____________
21. .16% ____________
22. 825% ____________
23. .15% ____________
24. .02% ____________
25. 2000% ____________
26. .032% ____________
27. .04% ____________
28. 3.9% ____________
29. ½% ____________
30. ¾% ____________

31. 6¼% ____________

32. 16½% ____________

33. 17¼% ____________

34. 26 ¾% ____________

35. 6 2/5% ____________

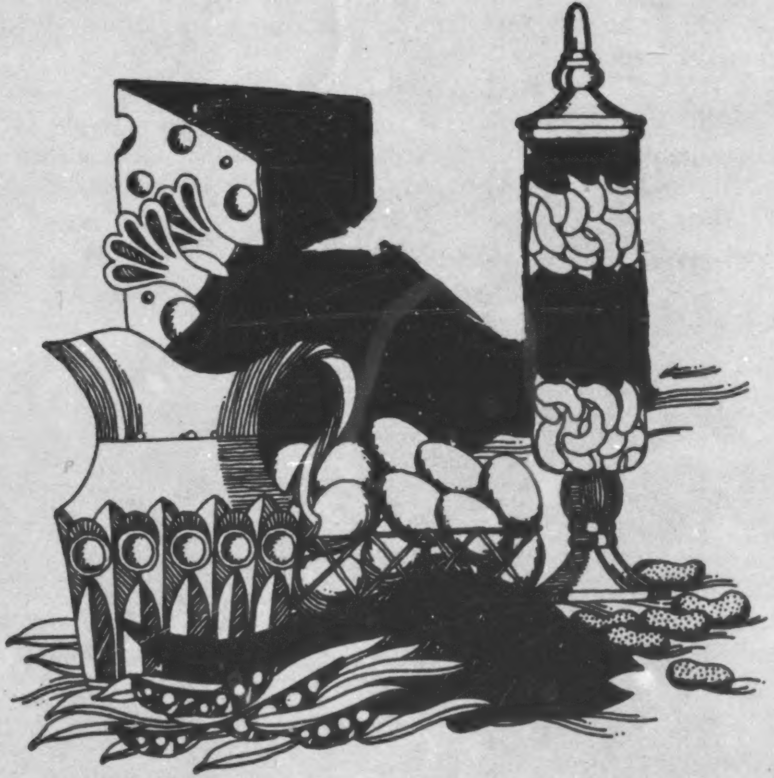
36. 8.2% ____________

37. 4$\frac{1}{8}$% ____________

38. 12½% ____________

39. 33$\frac{1}{3}$ % ____________

40. .32% ____________



Lesson 3 **Decimals to Percents**

Objective: You will be able to change a decimal to a percent.

Related Information:

If you learned your rule well for changing a percent to a decimal, you will have little difficulty learning how to change a decimal to a percent. It's just the opposite.

TO CHANGE A DECIMAL TO A PERCENT: Move the decimal point *two* places to the right and *add* a percent sign.

Examples: .50 = 50% (.50 $\underparen{.50},$ 50.% 50%)

.5 = 50% (.5 $\underparen{.5\ },$ 50.% 50%)

5.5 = 550% (5.5 $5\underparen{.5\ },$ 550.% 550%)

50 = 5000% (50 $50\underparen{.\ \ },$ 5000.% 5000%)

Note above that in each case we moved the decimal point two places to the right. Add zeros if necessary. . . . but make sure you move two places.

Where there is a whole number to be changed to a percent, as in 50 above, the decimal is understood to be after the 50 – although we did not have to show it in the whole number. But when you must change the 50 to a percent, you need to show that decimal. You put it in and move it two places to the right.

In all the examples above, the percent that we obtained was a whole number. Therefore we were able to drop the decimal point after the number. But if you obtain a decimal fraction for an answer, you would naturally keep the decimal point.

Examples: .125 = 12.5% (You might prefer to call this 12½%.)

6.3333 = 63.33% (You might prefer to call this 63 1/3%.)

ASSIGNMENT A:

Do the following problems. Your instructor will go over them in a few minutes. If you get them correct, you are about ready for the main assignment.

1. .10 Change to a percent: ____________
2. .80 Change to a percent: ____________
3. .2 Change to a percent: ____________
4. 4.5 Change to a percent: ____________
5. .45 Change to a percent: ____________
6. 20 ____________
7. 2.05 ____________
8. .725 ____________
9. .3 ____________
10. .3075 ____________

So far we have avoided problems involving fractions. Following is an example of how to change a mixed number to a percent:

8½	Step 1.	Change the fraction to a decimal (½ = .5)
8.5		This is the equivalent decimal.
$8.\underparen{50}$	Step 2.	Move decimal point two places to the right.
850%	Step 3.	Add the percent sign.

ASSIGNMENT B:

1. $2\frac{1}{4}$ Change to a percent: ____________
2. $10\frac{1}{2}$ Change to a percent: ____________
3. $1\frac{3}{4}$ Change to a percent: ____________
4. $6\frac{2}{3}$ Change to a percent: ____________
5. $1\frac{3}{8}$ Change to a percent: ____________

ASSIGNMENT C:

Change the following decimals to percents:

1. .43 ____________
2. 3 ____________
3. .17 ____________
4. 1.34 ____________
5. 2.08 ____________
6. .07 ____________
7. .02 ____________
8. .325 ____________
9. .304 ____________
10. 2.5 ____________
11. .005 ____________
12. .045 ____________
13. .0275 ____________
14. $2\frac{1}{3}$ ____________
15. $1\frac{1}{2}$ ____________
16. $2\frac{3}{5}$ ____________
17. $3\frac{1}{4}$ ____________
18. $5\frac{3}{4}$ ____________
19. 1 ____________
20. .01 ____________

UNIT V – PERCENTAGE

Lesson 4 **Percents to Fractions**

Objective: You will be able to change a percent to a fraction.

Related Information:

What does "Percent" actually mean?

The "cent" part comes from the Latin word "centum," meaning hundred. "Percent" means *for each hundred.*

If we say 5% we mean *5 out of each 100.*

If we say 30% we mean *30 out of each 100.*

Percent is simply another way of expressing a fraction. (Remember we said that, even when the language is different, the meaning may be the same.)

3% means 3 out of a hundred or $\frac{3}{100}$

10% means 10 out of a hundred or $\frac{10}{100}$

We can reduce this latter fraction to lowest terms, and we get 1/10, or one out of 10.

ASSIGNMENT:

A. Change the following percents to fractions with 100 as the denominator.

1. 30% expressed as a fraction equals ____________
2. 8% expressed as a fraction equals ____________
3. 75% expressed as a fraction equals ____________
4. 124% expressed as a fraction equals ____________
5. 1% expressed as a fraction equals ____________

B. Now practice reducing the fractions to lowest terms.

1. 20/100 reduced to lowest terms is: ____________
2. 5/100 reduced to lowest terms is ____________
3. 200/100 reduced to lowest terms is ____________
4. 25/100 reduced to lowest terms is ____________
5. 75/100 reduced to lowest terms is ____________

C. Change the following percents to fractions or mixed numbers in lowest terms:

Note: If you cannot reduce the fraction, that means it is already *in* its lowest terms.

Example: 23% = 23/100 (That is the answer.)

1. 40% ________
2. 60% ________
3. 45% ________
4. 80% ________
5. 100% ________
6. 5% ________
7. 73% ________
8. 15% ________
9. 47% ________
10. 125% ________
11. 7% ________
12. 88% ________
13. 200% ________
14. 325% ________

You will sometimes have to convert fractional percents to ordinary fractions. This can be done by actually dividing by 100. For example, to express 37½% as a fraction, here is what you would do:

$$37\tfrac{1}{2}\% = \frac{75}{2}\% = \frac{75}{2} \div 100$$

$$\frac{75}{2} \div \frac{100}{1} = \frac{75}{2} \times \frac{1}{100} = \frac{75}{200}$$

The number 25 divides evenly into both parts of the fraction:

$$\frac{75}{200} = \frac{3}{8}$$

You may already have recognized the 37½% as .375 or 3/8.

In Assignment D, if you recognize any of the fractional percents, just write in the correct answer without going through the division process.

ASSIGNMENT D:

1. 12 1/2% ________
2. 33 1/3% ________
3. 8 1/3% ________
4. 16 2/3% ________
5. 62 1/2% ________

6. 66 2/3% ________

7. 2 1/2% ________

8. 6 1/4% ________

9. 87 1/2% ________

10. 83 1/3% ________

Another difficulty students have with percent:

½% is *not* 50%: ½% is very *small;* 50% is *large*

¼% is *not* 25%: ¼% is very small; 25% is fairly large

ASSIGNMENT E: Convert the following percents to fractions in lowest terms.

1. 25% ________
2. 250% ________
3. 75% ________
4. ½% ________
5. ¼% ________
6. ¾% ________
7. 7.5% ________
8. 12½% ________
9. 1/8% ________
10. 2% ________

You will not have much use for small fractional percents, except in figuring interest, and then they are usually part of a mixed number. For example, a bank might pay interest at 5¾% or 6¼%, etc. The fractional percent adds just a bit extra.

UNIT V – PERCENTAGE

Lesson 5 — **Reading Decimals**

Objective: You will be able to read decimal fractions accurately.

Related Information:

Sometimes you will find it necessary to change a decimal fraction to an ordinary, proper fraction. Changing a decimal fraction to an ordinary fraction is a very simple procedure *if you know how to read a decimal properly.* For this reason a simple review is in order.

2 or 2. is read as "two"
.2 is read as "two tenths"
.22 is read as "twenty-two hundredths"
.222 is read as "two hundred twenty-two thousandths"

MEMORIZE:
.□ one place = tenths
.□□ two places = hundredths
.□□□ three places = thousandths
.□□□□ four places = ten-thousandths

Some more examples before the assignment:

2.2 = two *and* two tenths (Note: the decimal point is read as "and.")
2.02 = two and two hundredths (the zero is silent)
2.002 = two and two thousandths
22.0022 = twenty-two and twenty-two ten-thousandths

Read the number before the decimal; then say the *and*; then read the number after the decimal and indicate the number of places by saying *tenths, hundredths, thousandths,* or *ten-thousandths.*

Note: Thousandths and ten-thousandths are very important in certain trades, where great accuracy in measurements is needed – for example, in the machinist trade. As a foods trade worker, you will rarely see them, but still you should know what they mean.

ASSIGNMENT

A. Write in words and read orally the following:

1. .8 ______________________________
2. .1 ______________________________
3. 1.5 ______________________________
4. .03 ______________________________
5. .24 ______________________________

B. Write the following in words:

1. .86 ____________________

2. 1.6 ____________________

3. 2.9 ____________________

4. 38.5 ____________________

5. 14.3 ____________________

6. 126.4 ____________________

7. 7.37 ____________________

8. 89.03 ____________________

9. 30.46 ____________________

10. 248.19 ____________________

11. .005 ____________________

12. .008 ____________________

13. .025 ____________________

14. .832 ____________________

15. 6.005 ____________________

16. 1.758 ____________________

17. 86.528 ____________________

18. 200.042 ____________________

19. .606 ____________________

20. .045 ____________________

Objective: You will be able to convert a decimal fraction to an ordinary fraction.

Related Information:

Now that we have reviewed how to read decimal fractions, you should have no trouble learning to convert decimal fractions to ordinary fractions.

Step 1. READ THE NUMBER. Example: .5 = 5 tenths

Step 2. Put the number (5) over the word: $\frac{5}{\text{tenths}}$ (change to ten) $\frac{5}{10}$

Step 3. Reduce to lowest terms: $\frac{5}{10}$ becomes $\frac{1}{2}$.

Example 2: .25 becomes "twenty-five hundredths," or $\frac{25}{100}$.

Remember:

When you say "tenths," put a 10 under the line of the fraction.

When you say "hundredths," put 100 under the line of the fraction.

When you say "thousandths," put 1000 under the line of the fraction.

Example 3: .125 becomes "one hundred and twenty-five thousandths," or $\frac{125}{1000}$.

You can often reduce the fraction. This one becomes $\frac{1}{8}$. Perhaps you recognize an old friend, .125 = 1/8.

ASSIGNMENT A:

1. .8 Change to a fraction:
2. .30 Change to a fraction:
3. .02 Change to a fraction:
4. .800 Change to a fraction:
5. .17 Change to a fraction:

Sometimes a problem involves a whole number and a decimal:

Example: 2.5 is read as "two and five tenths," which becomes $2\frac{5}{10}$.

Reducing, it becomes $2\frac{1}{2}$.

ASSIGNMENT B:

1. 31.5 Change to a whole number and fraction: __________
2. 2.4 Change to a whole number and fraction: __________
3. 50.5 Change to a whole number and fraction: __________

ASSIGNMENT C:

Change the following to fractions or mixed numbers in lowest terms.

1. .20 __________
2. .75 __________
3. .05 __________
4. .10 __________
5. .625 __________
6. 2.40 __________
7. .375 __________
8. 50.75 __________
9. 1.5 __________
10. 4.25 __________
11. 20.80 __________
12. .875 __________

UNIT V – PERCENTAGE

Lesson 7 — Fractions to Decimals to Percents

Objectives: You will be able to change a fraction to a decimal. Based upon work in previous units, you should then be able to convert the decimal to a percent.

Related Information:

Back on page 150, we showed you how to convert an ordinary fraction to a decimal fraction. So as to avoid having to do this, we suggested that you memorize the decimal equivalents of the most frequently used fractions.

Sometimes, however, you may forget these equivalents. Then you have to work them out again. So let us review how this is done.

To change a fraction to a decimal, *divide the denominator into the numerator.*

Example: $\frac{1}{2}$ becomes $2\overline{)\,1\,}$

The 2 won't go into the 1. So we add a decimal point and one or two zeros. (If we are aiming for a percent, it is helpful to use two zeros, or more if necessary.)

$2\overline{)1.00}$ Then divide: $\begin{array}{r} .50 \\ 2\overline{)1.00} \end{array}$

The answer, .50, can now be changed simply to 50%.

(Recall the rule: To change a decimal fraction to a percent, move the decimal point two places to the *right and add the % sign.*)

ASSIGNMENT A:

1. 1/4 Change to a decimal and percent: ________ ________

2. 1/8 Change to a decimal and percent: ________ ________

3. 1/5 Change to a decimal and percent: ________ ________

ASSIGNMENT B:
Change the following to decimals and percents:

1. 1/10 ________ ________
2. 3/8 ________ ________
3. 3/5 ________ ________
4. 1/3 ________ ________

5. 1/5 ____________ ____________

6. 1/100 ____________ ____________

7. 3/10 ____________ ____________

8. 4/5 ____________ ____________

9. 1/6 ____________ ____________

10. 2/3 ____________ ____________

11. 1/16 ____________ ____________

12. 1/12 ____________ ____________

What do you suppose could delight 100% of these bakers so much?

ASSIGNMENT C:

By now you should be able to convert from any one form to any other. . . so let's try this chart. Refer back to previous pages if you have trouble. Do not try to do the ratio column at this point.)

No.	Fraction	Decimal	Percent	Ratio
1.		.50		
2.	$\frac{1}{4}$			
3.			75%	
4.		.125		
5.	$\frac{3}{8}$			
6.		.333		
7.	$\frac{1}{10}$			
8.			$66\frac{2}{3}\%$	
9.		.20		
10.			15%	
11.			80%	
12.		.875		
13.	$\frac{1}{25}$			
14.			$62\frac{1}{2}\%$	
15.			$\frac{1}{2}\%$	

UNIT V – PERCENTAGE

Lesson 8 Percentage Problems

Objectives: You will review the meaning of percent.
You will learn to solve two different types of percentage problems.

Related Information:

Up to this point you have been learning the mechanics of changing from decimal fraction to percent, percent to decimal fraction, and decimal fraction to ordinary fraction. At this point it is important that you make certain you understand the meaning of percent.

In a previous unit we mentioned that percent means *for each hundred.*

50% means 50 out of each 100 or $\frac{50}{100}$, which equals $\frac{1}{2}$.

You should memorize certain percentages.

100% equals the *whole thing.*

Two whole things equals 200%.

When we think of percent we must know *what is meant by* the whole thing. Someone must tell us what it is.

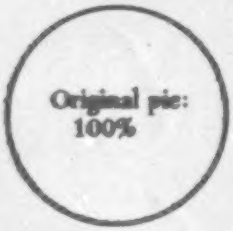
A 12" apple pie might be the *whole thing* or the *original amount*, or 100%.

An 8" apple pie might be the *whole thing* or the *original amount*, or 100%.

100% of the 12" pie is certainly not the same thing as 100% of the 8" pie.

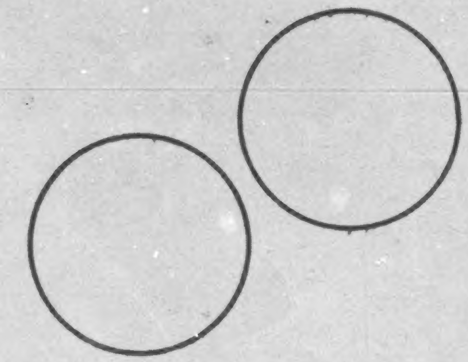
If the 12" pie represents the whole thing, then two 12" pies would be 200%, three 12" pies 300%.

If we cut the 12" pie in half, we now have 1/2 or 50% (of the 12" pie).



Half of the
original pie:
50%

One-quarter of the
original pie:
25%



Original pie plus
another like it:
200%

Learn to picture the ***whole thing*** or the ***original amount*** in your mind. A 20% tip is 20% of the whole cost of the dinner; 5% interest on your bank account means 5% of all the money you have in the bank (the whole thing). It also means 5 dollars for each 100 dollars. Keep these two related concepts in mind.

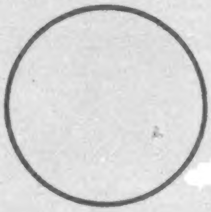
100% means the *whole thing;*

50% is *half* of the *whole thing;*

25% is *one quarter* of the *whole thing.*

1% is a very small amount (1 out of each 100) of the whole thing, and ½% is an even smaller amount (½ of 1%).

Original
amount
= 100%



Original
amount
= 100%

Here we have two things, each being 100% – but they are not equal. In thinking about percent, *you must always have in mind what the original amount is.*

When working with percentages, we generally must be very exact. A difference in ½% in a mortgage loan on a business may amount to thousands of dollars over a long period of time. When a discount is made on an item, it must be correct to the nearest cent.

DIFFERENT USES OF PERCENT

In the food-service industry, *tips* are based on a percent of the price of the meal: either 15% or 20% is standard today for a waiter or waitress.

When a restaurant bill is added up, often a tax must be added to it. This tax presently amounts to 5% in the State of New Jersey.

If you pay your bills promptly, you may be allowed a 2% *discount*. On the other hand, you may have to pay extra if you do not pay your bill on time.

Whether taking out a *loan* for the business, paying a *mortgage*, or dealing with your own personal savings account, *interest* is expressed as a percent. We hear about inflation and how the cost of living goes up; this too is expressed as a percent. Businessmen, in discussing their business, use terms such as "we did 20% better than last month."

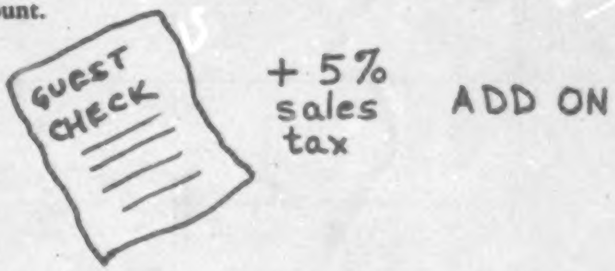
Percentage problems seem difficult to do because there are three different types of problems. Since one of the types is not often met with in everyday living, we shall skip it, and learn to do the two types that you will come upon often in your work and in your nonworking life. We will call them Type A and Type B problems.

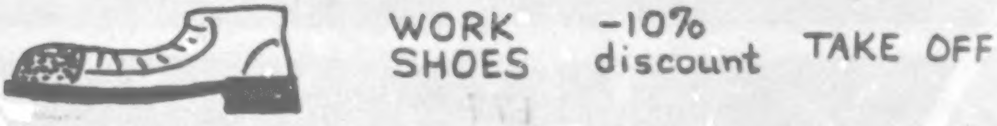
TYPE-A PERCENTAGE PROBLEM

You total up a guest check. . . this total is called the original amount. Example: Price of a dinner – $5.00. You must charge the sales tax, now 5% in New Jersey. It is called the rate. *The rate is always the number with the percent sign (%).*

You are looking for the *amount to add on* to the original amount. You want to know this in dollars and cents, so you can compute the new total.

This is the most common type of percentage problem, where you know the original amount and the rate, but must find the amount to add on or subtract. You do not always add on, you know. When you get a discount, you deduct (subtract) from the original amount.





Here is a chart of a typical type-A problem:

Original amount	Rate	Amount of increase or Amount of decrease
$25.00	5%	?

TYPE-B PERCENTAGE PROBLEM

One wholesaler offers you a 15% discount off the original price of a new dishwasher (type A problem), but another wholesaler tells you he will save you 50 dollars on the list price. How do you compare the two different net prices? In the case of the second dealer he did not tell you the *rate* – the amount with the percent sign – you must figure it out yourself.

Other examples of TYPE B problems: The customer left $1.00 on a $5.00 meal. *What was the percent of the tip?*

Our business went up from $30,000 income last year to $40,000 this year. *What was the rate of increase?*

Here is a type-B problem illustrated on a chart:

Original amount, or List price	Rate	Amount of increase or Amount of decrease
$25.00	?	$1.25

Now let's put the two charts together, and look carefully at them.

	Original amount, or List price, or Catalog price	Rate (%)	Amount to be added on or taken off
A	(of) $25.00	10%	? (Multiply $25.00 by 10%)
B	(of) $25.00	% (Divide $25.00 into $2.50)	$2.50

We used the same amounts in both types of problems. Note how each one has something different missing.

A typical A-type problem might read: The list price was $25.00 and the discount is 10%. How much is the discount (the amount to be taken off)?

A typical B-type problem might read: A discount of $2.50 was allowed on a purchase of $25.00. What percent was it? (A B-type problem is very easy to identify because of the missing percent.)

The math operations for each type will be shown in more detail later, and you will get practice doing the problems on the following pages.

An additional comment on placing the proper numbers in the proper boxes. Place the word "of" before the first box. The number after the "of" usually goes into the first box.

10% *of $25.00?* ($25.00 goes into first box.)
What percent is $2.50 *of $25.00?* ($25.00 goes into first box)

It sometimes helps to add a box to the end of the chart to indicate the NEW PRICE. In most problems, not only must the amount to be added be found, but the new price is also required. What is the amount you must pay on a $5.00 meal if the sales tax is 5%? Rate = 5%. 5% of $5.00 = $.25. Add $.25 to the $5.00, and you must pay $5.25.

Our $25.00 order was raised 10%, due to inflation. What is the price we had to pay?

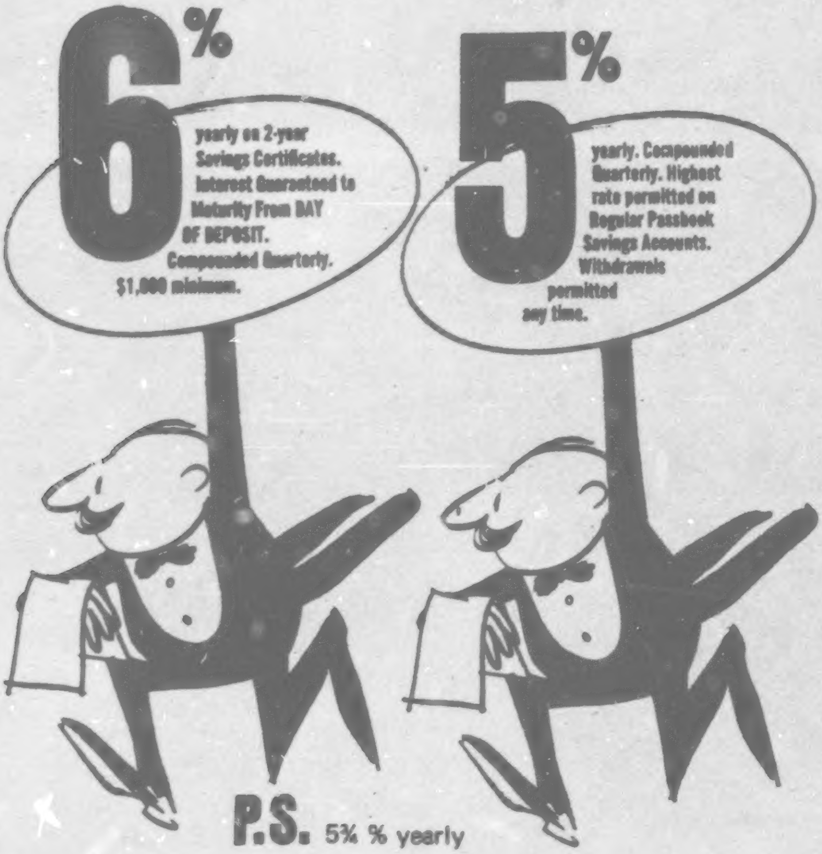
			New price
$25.00	10%	Ans. $2.50	$27.50

Percentage Problem Analyzer

	Original amount	Rate	Amount of Increase or Decrease		New Price
A	(of)	× %	?	—	
B	(of)	÷ ? %		—	

The following words may be used instead of the terms above.

Regular price	Percent	Discount	Sale price
List price		Gross profit	Total price
Catalog price			
Original price			
Regularly			
Cost price			
Cost			
Base	Rate	Percentage	
Interest problems: Principal	Rate	Interest	



6% yearly on 2-year Savings Certificates. Interest Guaranteed to Maturity From DAY OF DEPOSIT. Compounded Quarterly. $1,000 minimum.

5% yearly. Compounded Quarterly. Highest rate permitted on Regular Passbook Savings Accounts. Withdrawals permitted any time.

P.S. 5¾ % yearly
on 1-year Savings Certificate

Using the chart, see if you can identify the following problems as to type:

1. "10% of 40" is a Type ____ problem.

2. "50 dollars is what percent of 300 dollars?" is a Type ___ problem.

ASSIGNMENT A.

Fill in the letter of the *type* of problem only (A or B): Type

3. 8% of 30. ____ ________

4. What percent is a $2.00 tip on an $18.00 meal? ____ ________

5. 5% interest on $1,000 in the bank. ____ ________

6. A 15% discount on a $60.00 suit. ____ ________

7. I saved $1.00 on a $5.00 tie on sale. What was the percent of the discount? ____ ________

8. 45% of 450. ____ ________

9. What percent is 25 of 50? ____ ________

Type

10. 5% sales tax on a $22.00 dinner. ______ ______

11. If the social security tax is 5.85% and you earned $100.00 last week, how much did they take out of your pay for social security? ______ ______

12. 3 is what percent of 30? ______ ______

13. You are allowed a 2% discount for paying your $500.00 food bill on time. How much do you save? ______ ______

14. A 30% discount on all old-style serving trays. The original price of the trays was $15.00 per dozen. How much do you save? ______ ______

15. We earned $15,000 last year in our business. This year we made $18,000. What is the percent increase in profit this year over last year? ______ ______

PROCEDURE – How to do type-A percentage problems:

Example 1: Find 5% of 200

a. All type-A problems are *multiplication* problems. (Remember our hint – "of" means the original amount.)

b. First the 5% is changed to a decimal (.05). (Remember that a percent cannot be used to work out a problem – it must be changed to a decimal fraction or regular fraction.)

c. Multiply

$$\begin{array}{r} 200 \\ \times\underline{.05} \\ 10.00 \end{array}$$

d. Answer 10.00 or 10 (The zeros are not necessary)

e. Check: Does the answer seem reasonable? Yes, it does.

Example 2: Find 35% of 942

a. Recognize this as a type-A problem, requiring multiplication.

b. Multiply

$$\begin{array}{rl} 942 & \text{(Whole amount)} \\ \times\ \underline{.35} & \text{(Percent, changed to a decimal)} \\ 4710 & \\ \underline{2826} & \\ 329.70 & \text{Answer} \end{array}$$

c. Check: 35% is close to 1/3 (33%)
329 is about 330, and this is fairly close to 1/3 of 942.
The estimate indicates the answer is at least approximately correct.

Example 3: Find 25% of 250.

a. Recognize the need to multiply.

b. Recognize that 25% is equivalent to the fraction 1/4.

c. Decide that it is probably easier to use the fraction 1/4 than the decimal .25.

d. Multiply $250 \times \frac{1}{4} = \frac{250}{4} = 62\frac{1}{4}$ Answer

e. Is the answer reasonable? The number 250 is a little more than 240, which is evenly divided by 4, giving 60. Therefore 62¼ is at least approximately correct.

PRE-ASSIGNMENT

1. 50% of 24
2. 30% of 50
3. $66\frac{2}{3}\%$ of 18

ASSIGNMENT B:

1. 40% of 25
2. 10% of 32
3. 12½% of 72
4. 75% of 28
5. 50% of 98
6. 37½% of 200
7. 87½% of 56
8. 90% of $45
9. 12% of $64
10. $33\frac{1}{3}\%$ of 90
11. 60% of $55.50
12. 25% of $1,764
13. 5% of 35
14. 2% of 200
15. 100% of 57

PROCEDURE – How to do type-B percentage problems:

Example 1: What percent of 40 is 8?

a. Identify problem as to type. The percent (rate) is missing; therefore it is a Type B problem.

b. 40 is the original amount. (Note the word "of.")
Note: It is the first number on the chart.

We are looking for the *% of 40.* Therefore we *divide* by the original amount: $\frac{8}{40}$

$$\begin{array}{r} .20 \\ 40\overline{)8.00} \end{array} = 20\% \text{ OR } \frac{8}{40} = \frac{\cancel{8}^{1}}{\cancel{40}_{5}} = \frac{1}{5} = 20\%$$

c. In a simple problem like this, it is easy to check by simply taking 20% of 40. Does it equal 8?

20% = .20

$$\begin{array}{r} 40 \\ \times\,\underline{.20} \\ 8.00 \end{array} = 8 \quad \text{The answer is correct.}$$

Example 2: What percent of 20 is 60?

a. Identify type of problem as type B, which calls for division.

b. The original amount is 20. (Note the word "of.")

c. Divide by the original amount: $\frac{60}{20}$

$$\begin{array}{r} 3 \\ 20\overline{)60} \end{array} = 3. \quad = 300\%$$

d. Is the answer reasonable? If you think carefully about the meaning of the problem, you will see that it is. Check the arithmetic by multiplying 20 by 3. (which is 300% converted to decimal form).

$$20 \times 3 = 60$$

PRE-ASSIGNMENT

1. $15 is what percent of $60? ________
2. $75 is what percent of $375? ________
3. What percent of 300 is 15? ________

ASSIGNMENT C:

4. $20 is what percent of $160? ________
5. $12 is what percent of $240? ________

6. $600 is what percent of $660? ________

7. 50 is what percent of 250? ________

8. 33 is what percent of 100? ________

9. $140 is what percent of $700? ________

10. 292 is what percent of 146? ________

11. What percent of .60 is .30? ________

12. What percent of $12.00 is $2.00? ________

13. What percent of $200 is $237.50? ________

14. What percent of .75 is .50? ________

15. What percent of 50¢ is 2¢? ________

16. What percent of 50 portions is 150 portions? ________

17. What percent of $38 is $46? ________

18. What percent of $1.00 is 17¢? ________

19. What percent of $2.00 is 28¢? ________

20. What percent of 5 dollars is 5 cents? ________

ASSIGNMENT D:

1. – 15. Work out the arithmetic for the problems on pages 171 and 172.

16. What tip might you expect on a $22 restaurant bill at a tipping rate of 15% ________

17. The store ad said: "Special sale – chrome-plated bar stools, regularly $49.95, on sale this week for $34.95." What percent *markdown* is this? (Use approximate figures to calculate.) ________

18. At 40% *off* list price, what would you pay for glassware listed at $96 a gross? ________

19. What is the social security tax on an annual wage amounting to $11,500 at a rate of 5.85 percent. If the employer paid the same amount as the employee, how much went into the social security fund altogether? ________ ________

20. What is the discount rate if Jean paid $9.00 for a uniform listing at $12.00? ________

21. Sue paid $6.75 for a cookbook that carried approximately a $9.95 price tag. How much did she save? Approximately what percent did she save? ________ ________

22. A cooking school advertised a "Brush-Up Special" for $40 for 4 sessions. It claimed the sessions were usually priced at $15 each. What percent savings was it offering?

23. Read over the ad for Rosie O'Grady's restaurant on the next page. Note that on Wednesday, all dinners are 10% off. On Monday and Tuesday, discounts are given on two sizes of butt steaks. Compute the percent of discount for each (use approximate figures). Compute the approximate percent of discount given for prime ribs on Thursday and Friday.

Brain teaser: Snuffy's Tavern made a net profit of $37,500 last year. This year it increased its profit by 12%. Mike's Spot made $45,000 last year, but due to increased expenses suffered a 14% decrease in profit this year. Which tavern made more money this year? How much more?

ROSIE'S...

FIGHTING INFLATION with DAILY SPECIALS

Monday & Tuesday	Reg.	Now
Rosie's Own Big Top Butt Steak	$5.95	$4.49
Rosie's Own Little Top Butt Steak	$4.95	$3.49

Wednesday

All dinners **10%** Off!*

Thursday & Friday	Reg.	Now
Rosie's Prime Ribs of Beef	$6.75	$4.79

All Dinners Include:
Unlimited Salad Bar & Choice of Potato, Plus Individual Loaf of French Bread.

*Dinner Only. Alcoholic Beverages Not Included In Discount

A HOUSE OF GREAT REPUTE
ROSIE O'GRADY'S
BEEF AND BOOZE

Route Thirty-Five, Eatontown, N.J.
Phone: Five, Four, Two-Oh, Ate, Oh, Oh!

Objective: You will learn how prices are marked up by fractions and by percents.

Related Information:

Marking up prices can be simple or complex depending upon some of the following factors: An item may have a price marked on it, set by the manufacturer. In cases like that, most retailers sell the product at the suggested price. Examples of this in a restaurant might be tobacco, candy, and gum items – probably sold at the cash register.

A second circumstance involves a type of item that is simple in nature, where we can determine the cost of each item. Examples of this might be baked goods. For example, a muffin costs us 5¢ to make, we will mark it up to 10¢. A danish costs us 10¢, and we will sell it for 25¢. An ice cream pop costs us 10¢, and we will sell it for 20¢.

A more complex situation results when we must take materials from many sources and combine them. A salad, a veal-cutlet dinner, a turkey dinner. What makes it complex is that we must figure out how much of each item is used and how much each item costs. In a salad we may have lettuce, tomatoes, mayonnaise, celery, tuna-fish, onion, etc. Even a simple sandwich may have four or five items going into it, which need to be included when computing its cost.

Back in Unit III we computed portion costs for several different menu items (see pages 101 through 113). Once we know portion costs, we are then able to apply a certain markup figure.

Some of the factors to be considered when marking up the price from the actual cost of ingredients include:

Labor – the cost of all the people who must be employed to make the product, serve the product, keep the place clean, and manage the place.

Overhead– rent, electricity, insurance, repairs, water, furniture, taxes, etc., etc.

Profit– A person is in business to make a profit. How much must he add on to get his profit?

There are different methods used to mark up prices. In the first instance above it was determined by the price marked on the item. In the next two cases we had to figure out the cost of the item. To this cost we add an amount to cover the items listed above: labor, overhead, and profit.

There are two simple methods which can be used: fractional and percent.

MARKING UP PRICES BY THE FRACTION METHOD

Example: Mark up a $1.00 cost by 1/3.

Cost: $1.00

$\frac{1}{3}$ of $1.00

$$\frac{1}{3} \times \frac{\$1.00}{1} = \frac{\$1.00}{3} = .33$$

Marked up price: $1.00 + .33 or $1.33

MARKING UP PRICES USING PERCENTAGE

Example: Mark up a $2.40 cost by 33%.

(You can use your knowledge and change the percent to a fraction and proceed as above, or you can convert 33% to .33 and multiply by the decimal fraction.)

Cost: $2.40

33% of $2.40 (Type A problem)

$$\begin{array}{r} \$2.40 \\ \times \quad .33 \\ \hline 720 \\ 720 \\ \hline .7920 = .79 \end{array}$$

Marked up price: $2.40 + .79 = $3.19

ASSIGNMENT:

Mark up the following prices by the percent indicated. You may use approximations provided they are close approximations.

1. 40¢; 30% markup ______
2. 80¢; ¼ markup ______
3. 92¢; 50% markup ______
4. 85¢; 75% markup ______
5. $1.25; 33% markup ______
6. $2.50; 1/3 markup ______
7. $3.20; 50% markup ______
8. 8¢; 200% markup ______
9. 23¢; 150% markup ______
10. $25.98; 15% markup ______

11. \$145.00; 25% markup ________

12. 65¢; 125% markup ________

13. 18¢; 1/3 markup ________

14. 27¢ 200% markup ________

15. 35¢; ½ markup ________

16. \$1.98; 33% markup ________

17. \$4.13; 75% markup ________

18. \$5.23; 100% markup ________

JUSTINE'S
CAMOMILE
TEA
HONEY

Lesson 10 **Simple Interest**

Objective: You will learn to figure simple interest on money borrowed.

Related Information:

When you borrow money from a bank or loan company you must pay a certain amount, called *interest,* for the use of this money. The original amount of money you borrow is called the *principal.* Businessmen often have to borrow money. When they start a business or buy a business from someone, they may have to make a loan. When they want to enlarge or improve their business, they may have to seek extra funds. Although it costs money to borrow money, if your business is successful you should be able to pay the money back with interest.

When you borrow money you want to know the amount of interest you must pay. The amount of interest will depend on *how much* you borrow, *how long* you keep the money, *how you pay it back,* and the *rate of interest. Rate of interest* means a certain percent of the principal for one year. You can borrow money for one year, two years, three years, or longer. Homeowners have mortgages that may take 20 or 30 years to pay back, and they pay interest over the entire period.

Businessmen usually borrow from banks, and they pay *simple interest* on a loan. The loan comes due at a certain time, and they pay it back at that time plus a certain percent of the loan (the interest rate) for each year.

There are many other ways of borrowing money. You may borrow from a bank or finance company (loan company) and pay a certain amount back each month, plus an interest charge on the money not yet paid back. Or the interest amount can be figured out in advance and then deducted *(discounted)* from the amount you receive, which you then pay off at a certain amount each month. For these loans it takes extra arithmetic to calculate the *true annual interest.*

We will deal only with loans that are paid off in one payment, at a stated (true) annual rate.

Think of the terms principal, rate,and interest the same way as you did for the typical percentage problem:

Principal	Rate	Interest
(the original amount you borrow)	%	(the amount added on that you must pay back)

Example 1: You borrow $500 for one year at the rate of 10% (Type A)

$500
× .10 Change the percent to a decimal.
$50.00 Multiply as in all type-A problems

Example 2: You borrow $500 for 3 years at the rate of 10% per year.

Get the interest for one year, as in problem 1 above. Then multiply your answer by 3.

3 × $50.00 = $150.00 Remember, the rate is 10% *per year*. Since you are borrowing the money for three years, you must pay 10% interest for each year of the loan.

Example 3: You borrow $500 for 3 months at the rate of 10% per year.

The year is divided into 12 months. You are borrowing the money for 3 months out of 12, or 3/12 of a year.

$$\frac{3}{12} = \frac{1}{4}$$

Interest cost for a full year = $50.00 (Found as in problem 1.)

$\frac{1}{4}$ of $50.00 Will give you the interest cost for 3 months.

$$\frac{1}{4} \times \frac{50}{1} = \frac{50}{4} = 12\frac{2}{4} = 12\frac{1}{2} = \$12.50$$

Therefore you pay $12.50 for borrowing $500 for 3 months at 10%.

You can change days into months:

60 days equals 2 months = 2/12 of a year

$$\frac{2}{12} = \frac{1}{6}$$

You can also use days as follows: $\frac{60 \text{ days}}{360 \text{ days (used for a whole year)}}$

This also reduces to $\frac{1}{6}$

In either case you would take $\frac{1}{6}$ of the interest for a year.

You can find the *rate* by following the same procedure you used in doing type-B percentage problems.

ASSIGNMENT:

1. Find the annual interest for the following loans:

Amount borrowed (principal)	Rate	Interest
a. $350	8%	________
b. $425	10%	________
c. $225	10%	________
d. $4500	8%	________
e. $10,000	9%	________
f. $2,250	6½%	________

2. Find the interest on the following loans:

Amount of loan	Rate	Time	Interest
a. $650	8%	3 years	________
b. $1250	9%	2 years	________
c. $20,000	8%	20 years	________
d. $8,500	10%	3 years	________
e. $4,000	9½%	3 years	________

3. Find the interest on the following loans:

Principal	Rate	Time	Interest
a. $750	8%	6 months	________
b. $430	10%	9 months	________
c. $1,200	9%	3 months	________
d. $420	8½%	4 months	________

4. Find the annual rate of interest on the following problems:

Principal	Interest	Time	Rate
a. $540	$43.20	1 year	________
b. $350	$21.00	1 year	________
c. $800	$68.00	1 year	________
d. $1,200	$120.00	1 year	________
e. $3000	$480.00	2 years	________
f. $460	$124.20	3 years	________
g. $200	$17.00	1 year	________
h. $5000	$900.00	3 years	________

5. Find the annual rate of interest for the following loans:

Amount borrowed	Time	Amount paid	Rate
a. $300	6 mos.	$318.00	________
b. $150	90 days	$153.00	________
c. $200	6 mos.	$206.00	________
d. $200	3 mos.	$206.00	________
e. $80	30 days	$81.00	________
f. $674	60 days	$680.74	________

6. Mr. Gerber borrowed $6,000 from the bank for 6 months at 8%. How much interest did Mr. Gerber pay? ________

7. A $1,300 loan was necessary if we wanted to replace the tables and chairs in our restaurant. At 8½%, how much interest would we pay on a 2-year loan? ________

8. A stainless-steel-top worktable costs $1,354.00. At an annual rate of 8%, what would the interest amount to if I took out a loan for 6 mos? for 1 year? for 18 months?

9. A dishwasher unit costs $2400. The amount of interest came to $216 for 1 year. What was the rate?

10. A roasting oven with a stainless-steel finish costs $650. At an annual rate of 10%, what would the interest amount to on a 3-month loan?

11. A restaurant fryer, stainless-steel finish all over, costs $438. At 9% annual rate, what would the interest amount to for 6 months?

12. The Rusty Nail restaurant is paying 8½% on a $24,000 mortgage. If the mortgage runs for 20 years, how much will the interest amount to? How much money in all (principal and interest) will the owner have to pay over that period?

Lesson 11 **The Trade Discount**

Objective: You will learn how discounts are calculated in the food service industry.

Related Information :

People in the restaurant or food-preparation business purchase food from wholesalers or direct from the factory that makes the food, supplies, or equipment. The purchases made by a restaurant are usually in large quantities.

A wholesaler saves money when he sells in large quantities. It may cost him very little more to assemble and ship a large order than a small order. Many wholesalers pass some of these savings along to those who order in large quantities, and this encourages businesses to buy in larger quantities. Discounts from list prices for quantity purchases are called *quantity discounts.*

Wholesalers also encourage businessmen to pay their bills promptly by offering *trade discounts.* If a buyer pays the bill before a certain date he may deduct a certain percent from the amount, usually 2%.

Example 1: A restaurant buys 8 loaves of bread a day (2-lb. white loaf). The regular or list price is 55¢ per loaf. Because the restaurant buys large quantities it is given a 10% discount. Compute the cost of a 30-day supply of bread.

8 loaves × 30 days = 240 loaves

240 × .55 = $132.00

At a 10% discount:

$$\begin{array}{r} 132.00 \\ \times\ \ .10 \\ \hline \$13.2000 \end{array} = \$13.20 \text{ discount}$$

$132.00 – $13.20 = $118.80 Answer

The business world uses a simple code system to describe the conditions under which you can receive a discount for paying your bills early or on time.

Terms: 2/30 n/31

the 2 stands for 2% discount

the 30 means 30 days: you will get a 2% discount if you pay your bill within 30 days.

n means net: you will pay the regular amount (no discount) if you pay after 30 days. (You may be subject to a penalty if you take too long to pay.)

Example 2: An item was purchased for $200.00, terms: 2/30 n/31. If the bill was paid within 30 days from date of billing, how much was paid?

$$\begin{array}{r} \$200.00 \\ \times \quad .02 \\ \hline \$2.0000 \end{array} \qquad \begin{array}{r} \$200.00 \\ -\quad 2.00 \\ \hline \$198.00 \end{array} \text{ Answer}$$

(The discount may be small, but every bit helps the businessman!)

Example 3: Some restaurants purchase equipment on a "cost plus 10%" arrangement. This means that whatever it costs the wholesaler or manufacturer, he sells it for 10% more. He takes a markup of only 10% on the sale.

A stainless-steel dishwasher costs the equipment distributor $1,850. He agrees to sell it to you on a cost-plus-10% arrangement because you are a good customer.

$$\begin{array}{r} \$1{,}850 \\ \times \quad .10 \\ \hline \$185.00 \end{array} \qquad \text{\$1,850 plus \$185 (10\%):} \quad \begin{array}{r} \$1{,}850.00 \\ +\quad 185.00 \\ \hline \end{array}$$

Cost to you $2,035.00

ASSIGNMENT A:

1. A medium-weight aluminum saucepan costs $5.60. What price would you have to pay with a 10% trade discount?

1. If 2½-quart pitchers cost $2.25 each, and you purchased 1 dozen, what was your price with a 10% trade discount? How much money did you save?

3. Anodized aluminum pitchers cost $2.95 each in lots of 12 or more. In smaller quantities they cost $3.25 each. What percent do you save by buying the pitchers in lots of 12 or more?

4. You purchased the following items:
   1 8-oz ladle, $1.40 ea.
   2 16-oz ladles, $2.40 ea.
   1 perforated-bowl spoon, $1.25 ea.
   1 13" serving fork, $1.40 ea.
   What was the total bill? How much would these items cost you with a 10% discount? How much would you save with the discount?

5. Quantity discount:
   12 pieces – less 10%
   13 to 35 pieces – less 15%
   36 or more pieces – less 20%

You purchased 4 solid spoons, $2.80 each Cost ______
12 slotted spoons, $2.80 each Cost ______
24 utility knives, $2.60 each Cost ______
48 pie servers, $3.60 each Cost ______
Total cost ______

6. The price in the catalog on deep ladles is $4.60 each. In cartons of six or more they are $4.40 each. What is the percent discount on cartons of six or more for each ladle? ______

7. A deluxe full-size chafer costs $45.00 (list price). What will it cost me with a 15% discount? ______

8. A commercial can opener costs $15.75. What will my price be with a 5% discount? ______

9. Ten-gallon plastic storage cans cost $3.00 each. If I purchase four, the price is only $2.50 per can. What percent discount will I receive? ______

ASSIGNMENT B:

1. A portable vegetable peeler costs $225.00. The terms of your purchase are 2/30 n/31. You paid your bill 15 days after the date on the invoice. Did you get a discount? If so, how much? ______ ______

2. A gravity-feed slicer lists at $350.00. The terms are 2/30 n/31. Assume you paid the bill within the 30 days. How much did the slicer cost you? ______

3. A 1-gallon commercial blender lists at $295.00. Terms are 2/30 n/31. It was 40 days from the date of the invoice when you paid your bill. How much did you pay? ______

4. A 22-quart food mixer lists at $595.00. Terms are 2/30 n/31. Your invoice is dated July 15, and you paid the bill on August 10. Did you receive a discount? How much? What did the mixer cost you? ______ ______ ______

ASSIGNMENT C:

The cost to the wholesaler for each of the following items is given. You buy the items on a cost-plus-10% basis. Determine how much each item costs you.

1 45-qt S. S. mixing bowl, $60.00 ________

1 3-shelf utility cart, $34.00 ________

12 fiberglass trays at $22.20 a dozen ________

4 dozen fiberglass trays at $22.20 a dozen ________

1 gross sherbets at $6.60 per dozen ________

200 juice glasses at $1.20 per dozen ________

2 gross cups at $4.40 per dozen ________

UNIT VI – RATIO AND PROPORTION

Lesson 1 Ratio

Objectives: You will learn the meaning of ratio.
You will be able to simplify ratios to lowest terms and change ratios to fractions.

Related Information:

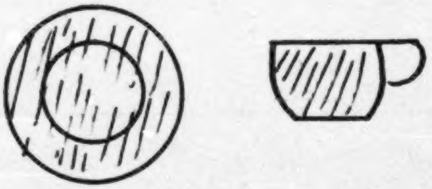
Ratio and proportion are important mathematical ideas which will enable you to quickly find solutions to problems involving price markups and recipe changes.

A ratio is the *comparison of one item to another.*

In proportion you work with two ratios. Proportion will be dealt with in the next lesson.

We may compare any two (or more) things that have weight, size, or numbers and thereby set up a ratio between them.

We will compare the number of cups to the number of saucers shown here:

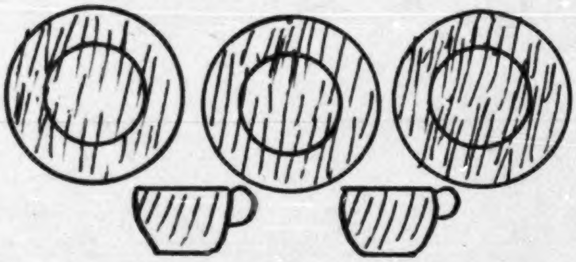


1 cup

1 saucer

The ratio is 1 to 1.

Now compare the number of cups to the number of saucers shown here:



3 saucers

2 cups

The ratio is 2 to 3.

What we did was to count up the number of cups (2) and compare this number with the number of saucers (3).

We can indicate the ratio this way: 2 : 3. The : sign means "is to."

We are saying "two is to three," or simply "two to three."

A complete sentence would read: "The ratio of cups to saucers is two to three."

We can also reverse the relationship by comparing the number of saucers to the number of cups, in which case we would have 3 to 2.

Ratios can also be written as fractions. The number after the colon or the word "to" is the denominator. The first number is the numerator.

Example 1: 1 : 3 can also be written as the fraction $\frac{1}{3}$.

Example 2: 5 : 10 can be written $\frac{5}{10}$, which, as you know, reduces to $\frac{1}{2}$.

Example 3: 12 : 4 equals $\frac{12}{4}$, which reduces to $\frac{3}{1}$.

A ratio, then, is a comparison of two things. If we are to compare things, we must be sure they are expressed *in the same units.*

We *can* compare 12 cups to 4 saucers. (Each is a count of individual things or units).

We *can* compare 3 inches to 18 inches.

We *can* compare 2 ounces to 8 ounces.

. . . . because the units are the same. BUT . . . .

We *cannot* compare 1 *dozen* cups to 4 saucers without first changing the 1 dozen to units (12), or changing the 4 saucers to a fractional part of a dozen (1/3).

We can compare dozens to dozens or units to units, but not units to dozens.

We can compare inches to inches, yards to yards, feet to feet, but not yards to inches or feet to yards.

PROCEDURE: While it is possible to talk about a ratio such as 50 : 100, we generally reduce the numbers to lowest terms.

50 : 100 Look for the largest number that will divide evenly into both terms of the ratio.

10 seems to suit both sides of the ratio. Divide both sides by 10.

$\frac{50}{10} : \frac{100}{10}$ 10 into 50 = 5
10 into 100 = 10

5 : 10 (Note: we did not pick the largest number; 50 would have been better. So we must continue to reduce.)

$\frac{5}{5} : \frac{10}{5}$ 5 into 5 = 1
5 into 10 = 2

Answer 1 : 2

Note that a ratio need not have *any* units. It is just a mathematical idea. If we compare 3 inches to 18 inches, we could write

3 inches : 18 inches

These are *denominate numbers* (see page 28). In order to simplify this expression, we can divide both quantities by *3 inches:*

3 inches : 18 inches

$$\frac{3 \text{ inches}}{3 \text{ inches}} : \frac{18 \text{ inches}}{3 \text{ inches}}$$

$$\frac{{}^{1}\cancel{3}\ \cancel{\text{inches}}}{{}_{1}\cancel{3}\ \cancel{\text{inches}}} : \frac{{}^{6}\cancel{18}\ \cancel{\text{inches}}}{{}_{1}\cancel{3}\ \cancel{\text{inches}}}$$

We end up with a ratio of 1 : 6. Just 1 to 6 – no units at all. So the ratio of 3 inches to 18 inches is 1 to 6. These are *pure numbers*, not denominate numbers.

In an election, you might have candidate A getting 4000 votes (approximately), and candidate B getting 3000 votes (approximately). What is the ratio of the votes?

4000 votes : 3000 votes

This may be simplified to

4 : 3.

This means just the *relationship between the numbers 4 and 3.* We may say that Mr. A won over Mr. B by a ratio of 4 to 3.

PRE–ASSIGNMENT: Change to the simplest ratio.

1. 2 inches to 6 inches________
2. 9 lbs to 6 lbs ________
3. 3 : 12 ________
4. 6 : 16 ________
5. 8 : 10 ________
6. 7 : 8 ________

ASSIGNMENT A. Express these ratios in lowest terms:

1. 2 to 8 ________
2. 3 to 15 ________
3. 24 : 48 ________
4. 9 to 12 ________
5. 15 to 25 ________
6. 12 to 10 ________
7. 15 : 45 ________
8. 50¢ to 75¢ ________
9. 20 to 100 ________
10. 5 to 75 ________

ASSIGNMENT B:

1. The ratio of 15 to 5 is the same as ___ to 1
2. The ratio of 21 to 3 is the same as ___ to 1
3. The ratio 8 to 6 is the same as ___ to 3
4. The ratio 12 to 10 is the same as ___ to 5
5. The ratio 18 : 24 is the same as 3 to ___

ASSIGNMENT C: Change to ratios in lowest terms:

1. 1 lb to 8 oz ________
2. 1 gal to 2 qts ________
3. 10 min to 1 hr ________
4. 1 gal to 1 pt ________
5. 2 ft to 8 in ________
6. 4 yds to 2 ft ________
7. $2.00 to 75¢ ________
8. 50¢ to $3.00 ________

ASSIGNMENT D: Express the following ratios as fractions reduced to lowest terms.

1. 9 to 12 ______
2. 48 to 72 ______
3. 16 to 48 ______
4. 15 to 20 ______
5. 13 to 52 ______
6. $1.25 to 6.25 ______
7. 30 to 60 ______
8. 3 dimes to 2 quarters ______
9. 25 mins to 3 hr ______
10 24 to 36 ______

ASSIGNMENT E: Complete the ratio column in the chart on page 164.

Additional problems in ratio:

So far the problems with ratio have been simple. To summarize, we have:

1. Compared items and reduced them to lowest terms. 8¢ to 24¢ = 1 to 3
2. Changed items if they were in different units and then simplified.

25¢ to $2 = 25¢ to 200¢ (or .25 to 2.00)

= 1 to 8 or 1 : 8

Ratio can also help us solve certain other types of problems.

Example 1: Two business partners divide their profits in a 4 to 1 ratio. What is each partner's share if the business earned $2000 for the month?

The ratio is 4 to 1, which means one man gets four parts and one man gets one part. *Together they get 5 parts.*

Divide the 5 into the $2000 = $400

The first man, who gets 4 parts: 4 × $400 = $1600

The second man, who gets 1 part: 1 × $400 = $ 400

To check, total up both shares $2000

Example 2: In a class of 20 students, the ratio of boys to girls is 3 to 1. How many boys are in the class?

The ratio is 3 to 1.

Add the 3 to the 1, to get 4 parts in all.

Divide: 4 into 20 = 5

Multiply the boys' part (3) by 5 = 15 – the number of boys

Multiply the girls' part (1) by 5 = 5 – the number of girls

To check, add: 20 – total number of students

PRE-ASSIGNMENT F:

1. Two business partners divide their profits in a 3 to 2 ratio. What is each partner's share if one month the profit came to $3000? ________ ________

ASSIGNMENT F:

1. A man and his son earn $150 per week. The ratio of their earnings is 5 to 1. What does each earn per week? ________ ________
2. In a restaurant with 26 workers, 15 work part time and 11 work full time. Give the ratio of:
   a. The number of part-timers to full-timers. ____ : ____
   b. The number of part-timers to the full staff. ____ : ____
3. Two business partners divide their profits in a 3 to 5 ratio. Find each partner's share of a profit amounting to $10,000. ________ ________

4. Three people went into the restaurant business and put up $30,000. The ratio of their investments was 3 to 2 to 1. How much cash did each put up?

____

____

____

5. A recipe for fish salad calls for 2 cups of celery, cut fine, and 2 cups of cooked fish, flaked. What is the ratio of celery to fish?

____ : ____

6. A woman and her daughter earn $320 per week. The ratio of their earnings is 5 to 3. How much does each earn per week?

____

____

7. A recipe for Thousand Island dressing calls for 3 quarts of mayonnaise and 3 cups of chili sauce. What is the ratio of chili sauce to mayonnaise?

____ : ____

8. The busboys in the Chesapeake Restaurant share the waiters' tips on a 1 to 2 basis. If the waiters collected $141.60 one evening, how much did the busboys receive?

____

9. For an oil-vinegar dressing, most recipes call for a 3 to 1 ratio of oil to vinegar. How much oil would be used in a dressing made with 2 cups of vinegar?

____

10. A weak brine for pickling beets was to be prepared with a 3:2 ratio of vinegar to water. To get 2½ quarts in all, how much of each ingredient would be needed?

____

____

Lesson 2 **Proportion**

Objectives: You will learn the meaning of proportion.
You will be able to complete proportion problems.
You will be able to set up a proportion to solve problems in the trade.

Related Information:

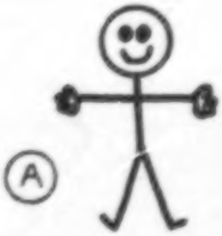
We use the concept of proportion in our everyday language without realizing we are expressing a mathematical relationship. We may speak of a young lady or young man as being well built or well *proportioned.* When we prepare a platter and put on different ingredients, the portions of each item have a definite relation to each other and to the whole. The well-prepared platter has the proper proportions.

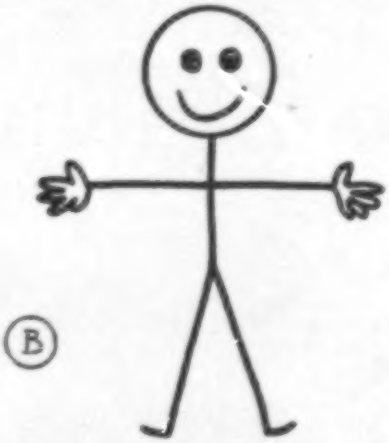
Proportion is a short way of saying that *two ratios are equal.* Below are sketches of two people. Although B is taller than A, his arms and legs are in the same proportion.

$$\frac{\text{Arms of A}}{\text{Height of A}} = \frac{\text{Arms of B}}{\text{Height of B}}$$

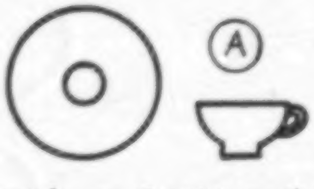
and

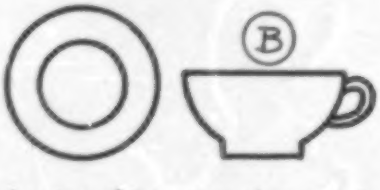
$$\frac{\text{Legs of A}}{\text{Height of A}} = \frac{\text{Legs of B}}{\text{Height of B}}$$





Below are sketches of two sets of cups and saucers. Are they in proportion?





Certainly not. Cup B is much larger *in proportion to* the size of its saucer than cup A.

$$\frac{\text{Size of cup A}}{\text{Size of saucer A}} \ \textit{does not equal}\ \frac{\text{Size of cup B}}{\text{Size of saucer B}}$$

In the above example we are not saying A cup is bad, or B cup is bad, but artistically we have developed a sense of proportion, and we make judgments about people and things based upon this sense.

While proportion is subject to artistic interpretation, it is also a very useful mathematical tool for working problems. We can use the concept in the trade to solve problems of *enlarging* or *decreasing* recipes.

Sometimes we even use proportion in math without realizing it.

Example: If you work 8 hours and received $12 in pay, what would you receive if you worked 4 hours?

You probably noticed that 4 is half of 8 and therefore you took half of $12 and came up with an answer of $6.

Not all problems are solved so readily, just by juggling a few numbers in your head. But all of this type and many others can be solved by a proportion. We set up two ratios that are equal to each other.

$$\frac{\text{8 hours}}{\text{12 dollars}} = \frac{\text{4 hours}}{\text{? dollars}}$$

$$\frac{\text{8 hours}}{\text{12 dollars}} \times \frac{\text{4 hours}}{\text{? dollars}}$$

$$\text{Cross multiply:}\quad 12 \times 4 = 8 \times ?$$

$$48 = 8 \times ?$$

$$\frac{48}{8} = ?$$

$$\$6 = ?$$

(We will explain the math process again later on in more detail)

$$\text{Check:}\quad \frac{\text{8 hours}}{\text{12 dollars}} = \frac{\text{4 hours}}{\text{6 dollars}}$$

$$\frac{8}{12} = \frac{2}{3} \qquad \frac{4}{6} = \frac{2}{3}$$

$$\frac{2}{3} = \frac{2}{3}\ \text{is true}$$

This check tells us that we did the mathematical work correctly, but if we had made a mistake in setting up the original proportion, this check would not catch the error. In addition to checking the math, therefore, look back at your original problem and *make sure that the answer makes sense!*

There is more than one way to solve problems by proportions. For example, we might have set up this proportion for the problem above:

$$\frac{\text{4 hours}}{\text{8 hours}} = \frac{\text{? dollars}}{\text{12 dollars}}$$

$$\text{or even}\quad \frac{\text{8 hours}}{\text{4 hours}} = \frac{\text{12 dollars}}{\text{? dollars}}$$

Any one of these proportions would have given us the same answer.

What you must do in setting up a proportion to solve a problem is make sure that *the relationship between the two figures to the left of the equals sign is the same as the relationship to the right of the equals sign.* Otherwise you might end up as we did with the cups on the previous page – just plain wrong.

Remember our definition: Proportion is two ratios that are equal.

Proportion provides us with an easy way to enlarge or reduce a drawing. This technique may be useful in decorating the restaurant or shop, and in related art. The new drawing will look like the old drawing because it has the same *proportions.* The ratio of height to width in the large drawing will be the same as the ratio of height to width in the small drawing. (See page 203.)

Now let's learn a little more about solving proportions.

Proportions can be written in three ways:

$$1 : 3 :: 4 : 12 \qquad \text{or} \qquad 1 : 3 = 4 : 12 \qquad \text{or} \qquad \frac{1}{3} = \frac{4}{12}$$

They all are read as follows:

"One is to three as four is to twelve."

A proportion has four terms:

$$\frac{\overset{\textit{1st term}}{1}}{\underset{\textit{2nd term}}{3}} = \frac{\overset{\textit{3rd term}}{4}}{\underset{\textit{4th term}}{12}}$$

$$\underset{\textit{1st term}}{1} \quad : \quad \underset{\textit{2nd term}}{3} \quad = \quad \underset{\textit{3rd term}}{4} \quad : \quad \underset{\textit{4th term}}{12}$$

The 1st and 4th terms, occupying the beginning and end positions of the proportional statement, are called the *extremes.* The 2nd and 3rd terms, being in the middle, are called the *means.*

$$\overset{\textit{EXTREMES}}{1 : \underset{\textit{MEANS}}{3 = 4} : 12}$$

In this case the extremes are the largest and smallest numbers (1 and 12). The means are the two middle-size numbers (3 and 4). The proportion would be just as correct if the means and the extremes were interchanged. Try it and see.

THE RULE: In a *true proportion,* the product of the means equals the product of the extremes.

PRE-ASSIGNMENT:

If the product of the means does *NOT* equal the product of the extremes, the proportion is not a true one. Which of these are true and which are not true proportions?

			Answer
1. 3 : 9 = 12 : 36	3 X 36 = 108	9 X 12 = 108	True
2. 2 : 7 = 8 : 28			
3. 3 : 20 = 6 : 40			

ASSIGNMENT A:

1. 1 : 6 = 5 : 30			
2. 3 : 8 = 1.5 : 4			
3. 3 : 5 = 4 : 8			
4. 3 : 9 = 5 : 15			
5. 4 : 3 = 8 : 6			

ASSIGNMENT B: (True or not-true proportions):

1. 1 : 2 = 5 : 10			
2. 7.5 : 3 = 5 : 2			
3. 5 : 8 = 2 : 3			
4. 2 : 7 = 6 : 21			
5. 2 : 5 = 10 : 25			
6. Example: $\frac{10}{15} = \frac{20}{30}$	10 X 30 = 300	20 X 15 = 300	True
7. $\frac{2}{9} = \frac{10}{45}$			
8. $\frac{27}{81} = \frac{1}{3}$			
9. $\frac{2}{5} = \frac{5}{15}$			
10. $\frac{3}{6} = \frac{10}{25}$			

In the above problems you were given all the numbers and had to decide whether or not they were true proportions.

Now you are going to learn how to solve a proportion problem when you do not know one of the numbers.

A proportion is an *equation,* and if you know all the parts of an equation except one, you can figure out the missing one. You can call the unknown or missing number x or N. Then you *solve the equation* for x or N.

Example: Solve for x:

$$\frac{2}{5} = \frac{x}{15}$$

RULE: In a true proportion the product of the means equals the product of the extremes.

The means are 5 and x. Therefore we multiply 5 X x. We indicate the multiplication by just writing them next to each other: 5x.

The extremes are 2 and 15. Therefore we multiply 2 X 15, which equals 30.

$5x = 30$ Now divide both sides by 5 so we can get just 1 times x.

$\frac{5x}{5} = \frac{30}{5}$ 5 goes into 5 once
5 goes into 30 six times

Answer: $x = 6$

Check in the original equation:

$\frac{2}{5} = \frac{6}{15}$ $2 \times 15 = 30$
$5 \times 6 = 30$

Therefore this is a true proportion and the answer $x = 6$ is correct.

Note: It does not matter where the x is; solve the problem the same way.

PRE-ASSIGNMENT C: Solve for the missing number:

1. $\frac{7}{8} = \frac{14}{x}$
2. $15 : 24 = x : 8$
3. $\frac{5}{9} = \frac{x}{27}$

ASSIGNMENT C: Solve for the missing number:

1. $\frac{6}{x} = \frac{2}{12}$
2. $\frac{6}{14} = \frac{x}{7}$
3. $\frac{x}{7} = \frac{8}{28}$
4. $\frac{6}{90} = \frac{x}{15}$
5. $\frac{x}{15} = \frac{12}{18}$
6. $\frac{5}{8} = \frac{25}{N}$
7. $\frac{1}{4} = \frac{N}{100}$

8. $\frac{3}{7} = \frac{12}{N}$ ________

9. $\frac{x}{15} = \frac{4}{5}$ ________

10. $\frac{1/2}{8} = \frac{x}{24}$ ________

11. $\frac{1.5}{9} = \frac{x}{30}$ ________

12. $\frac{12}{x} = \frac{4}{9}$ ________

13. $2:9 = 5:x$ ________

14. $3:3 = 75:x$ ________

USING PROPORTION TO SOLVE TRADE PROBLEMS

Example: John earns $2.00 per hour. How much will he earn in 8 hours?

SOLUTION: You can see that the *ratio* of John's pay to the number of hours he works remains constant. That is, if he works twice as long, he gets paid twice as much, and so on. We know how much he gets for working one hour. We want to know how much he gets for working 8 hours. We can do this problem by setting up a proportion where both ratios consist of the relationship of the number of *hours* to the number of *dollars.* We can make *either* the hours *or* the dollars the numerators – but we must *make both ratios the same way.*

$$\frac{1 \text{ hour}}{2.00} = \frac{8 \text{ hours}}{x \text{ dollars}}$$

$$1 \times x = 8 \times 2$$

$$x = 16$$

$$= \$16.00 \text{ for 8 hours}$$

Example: Joan earns $14.00 for 8 hours' work. How much will she earn in 16 hours?

Solution: *Dollars* to *hours* equals dollars to hours.

$$\frac{\$14}{8 \text{ hrs}} = \frac{x \text{ dollars}}{16 \text{ hrs}}$$

$$8 \times x = 14 \times 16$$

$$8x = 224$$

$$x = 28$$

$$= \$28.00 \text{ Answer}$$

Example: Change the following recipe: 10 oz of flour is used in a recipe for 12 people. Convert the recipe to serve 9 people.

$$\frac{\text{ounces}}{\text{portions}} = \frac{\text{ounces}}{\text{portions}}$$

$$\frac{10}{12} = \frac{x}{9}$$

$$10 \times 9 = 12 \times x$$

$$90 = 12x$$

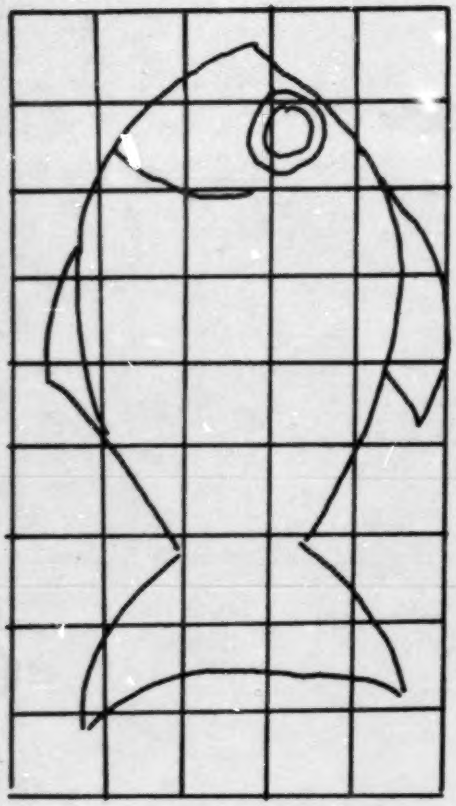
$$x = 7\tfrac{1}{2}$$

Therefore 7½ oz should be used to prepare 9 portions.

ASSIGNMENT D:

1. A cafeteria sells for 40¢ an item that costs 25¢. At the same rate of markup, what would be the selling price of an article that costs 35¢? ________
2. A student is paid $3.00 for 2 hours' work. How much will he be paid for 9 hours' work? ________
3. In our recipe we need 40 lbs of meat for 100 persons. How many pounds would be needed for 75 people? ________
4. In our recipe we need 8 lbs of potatoes for 25 people. About how many pounds would be needed for 12 people? ________
5. In our recipe we need 5 gallons of water for a soup to feed 100 people. How much do we need to feed 25 people? ________
6. If 5 pounds of potatoes cost 60¢, how much will 3 lbs cost? ________
7. If one dozen stainless steel serving pieces costs $2.40, how much will six dozen cost? ________
8. If one dozen plastic serving bowls costs $9.00, how much will 6 bowls cost? ________
9. If 5 pounds of onions cost 59¢, how much will 12 pounds cost? ________
10. If flour costs $1.80 for 10 lbs, how much will ½ pound cost? ________

ASSIGNMENT E: Try enlarging or decreasing these patterns.

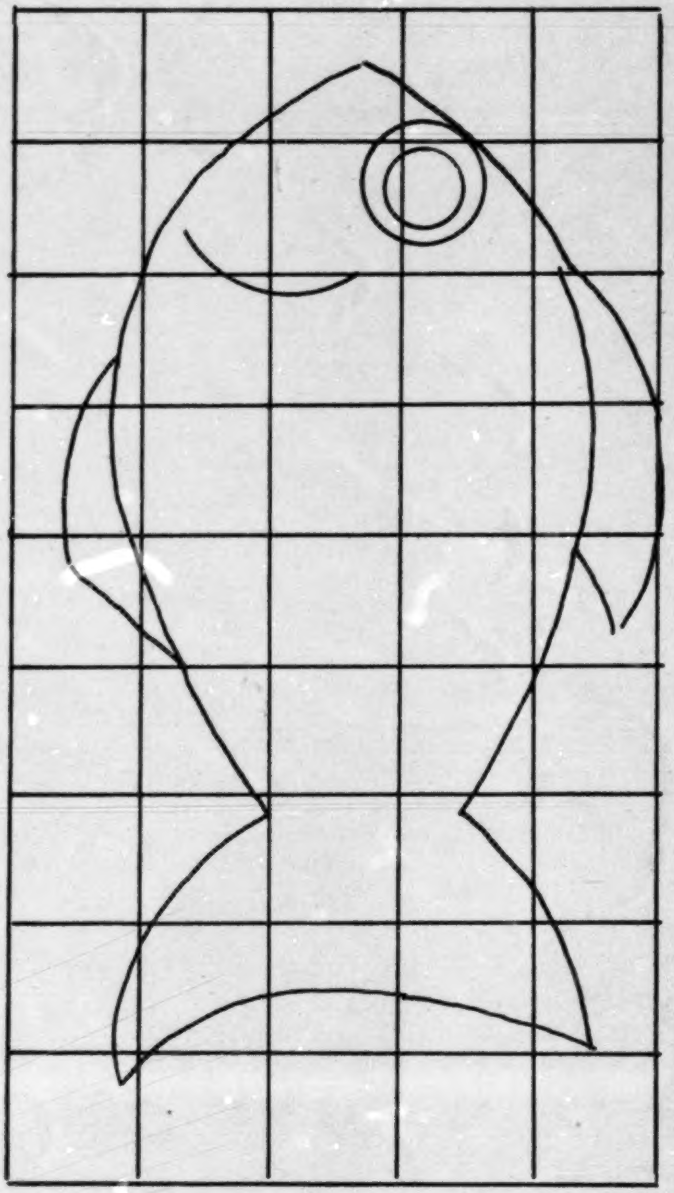


"ALL THE FISH YOU CAN EAT TODAY"

½-inch squares

Size of fish 2½ X 4

Half-inch squares have been drawn to suit the size of the picture....could have been ¼" or ¾" or 1" squares.



To enlarge, decide how large you want your fish.

Ours is 4" X 6", but we could have made it any size.

½" to 1" squares would have *doubled* the measurements.
(Ratio of 1 half to 2 halves give a ratio of 1 : 2.)

½" to 2" squares would have quadrupled the measurements.
(Ratio of 1 half to 4 halves = 1 to 4.)

Our size for the squares is ¾".
The ratio of ½ to ¾ is 2-fourths to 3-fourths. This gives us a ratio of 2:3.

The box lines help you determine where to draw the lines of the fish. The trick is to note where the fish lines cross the box lines.

ASSIGNMENT E: Converting recipes by the use of proportion.

You have had experience in converting recipes to different quantities – both by the use of simple multiplication and by the use of fractions. Now you will practice converting them by setting up proportions. Do not hestitate to use reasonable approximations (as for spices). Also, use realistic units based on your own experience.

1. Shish Kebab Yield, 20 portions. Change to 25 portions.

Ingredients		
Lamb	5 lbs	
Tomatoes ¾" slices	40 pieces	
Mushroom caps	40 pieces	
Pearl onions	40 pieces	
Green pepper	40 pieces	
Marinade:		
Salad oil	2 pts	
Olive oil	1 pt	
Vinegar	12 oz	
Lemon juice	4 oz	
Garlic, chopped	2 T	
Salt	2 T	
Pepper	2 t	
Marjoram	½ t	
Thyme	½ t	
Oregano	½ t	

2. Fried Chicken Maryland Yield, 50 portions. Change to 65 portions.

Ingredients		
Chickens (2¼ to 2½ lb ea)	25	
Bread flour	2 lb	
Salt and white pepper to taste		
Eggs, whole	6	
Milk	1 qt	
Bread crumbs	2 lbs	
Salad oil	1 qt	
Cream sauce	1 gal	
Tomato sauce	1 gal	
Bacon slices (crisp)	100	
Corn fritters	50	
Powdered sugar	as needed	

3. Broiled Halibut with Lobster-Newburg Sauce

Ingredients	Yield 50 portions	Change to 75 portions
Halibut, 6-7 oz boneless portions	50	______
Boiled lobster meat	3½ lbs	______
Butter	6 oz	______
Paprika	2 t	______
Light cream sauce	3 qt	______
Dry sherry	4 oz	______
Salt	to taste	______
Pepper	to taste	______
Lemon juice	from ½ lemon	______
Monosodium glutamate	1 T	______

4. Roast Loin of Pork

Ingredients	Yield 50 portions	Change to 35 portions
Pork loins	approx 30 lbs	______
Salt and pepper	to taste	______
Rosemary	2 t	______
Mirepoix:		
Onions	1 lb	______
Celery	½ lb	______
Carrots	½ lb	______
Bread flour	10 oz	______
Chicken or beef stock	5 qt	______

5. Hungarian Veal Goulash

Ingredients	Yield 50 portions	Change to 90 portions
Veal, boneless	17 lbs	______
Oil	2 cups	______
Onions	6 lbs	______
Hungarian paprika	½ cup	______
Bread flour	1 lb	______
Sachet bag:		
Caraway seeds		
Bay leaf		
Parsley stems		
Brown stock	2 gal	______
Tomato puree	1 #2½ can	______
Salt	to taste	______
Sour cream	1 qt	______

Lesson 1 **Computing Weekly Gross Pay**

Objective: You will gain an understanding of the methods of payment for workers in the food service industry.

Related Information:

People work for money or wages. Most people who work in a restaurant or other commercial food establishment will probably be paid according to one or a combination of the following methods:

1. Hourly worker – gets paid by the hour.
2. Salaried worker – gets paid a weekly salary.
3. Tips – given by the customer to the waiter or waitress
   Or a combination . . . . .
4. A waitress may get an hourly wage plus tips.

STATE LAWS:

Most workers in food service are protected by State wage and hour laws, rather than Federal laws. These laws set a minimum hourly rate of pay. In New Jersey the minimum rate is $2.20 per hour, as of 1975.

The New Jersey wage and hour law also states that employees who work over 40 hours per week are to receive 1½ times their regular hourly wage for the hours in excess of 40.

Overtime work is very important to many workers for a number of reasons.

a. The worker works extra hours and brings home more money.
b. The worker gets a higher rate of pay for the hours he works overtime.

For many people who are looking for those little extra luxuries, overtime pay means an opportunity to earn money over and above the regular wages. You may get overtime on a regular basis or only when your place of work gets extra busy.

In addition, according to State Law:

a. You must get paid at least twice a month.
b. There should be a regular payday known to all employees.
c. If you get paid by check you must be able to cash the check without difficulty.
d. No deductions may be taken out of your pay except those authorized by the State or Federal government, or where *you* have authorized your employer to take out certain amounts for:
   - Insurance
   - Medical and surgical plans
   - Retirement pension

Profit sharing
Savings bonds
Union dues

The employer must also:

Notify all employees at the time of hiring of their rate of pay and when payday is.

Provide each employee with a statement of deductions.

Keep records for employees of wages and hours.

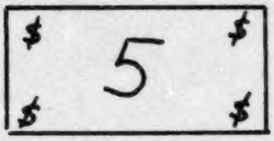
Where waiters and waitresses are concerned (who receive tips), the employer does not have to pay the minimum wage. BUT the meals and/or tips added to the wage must equal at least the minimum wage of $2.20.

THE HOURLY WORKER

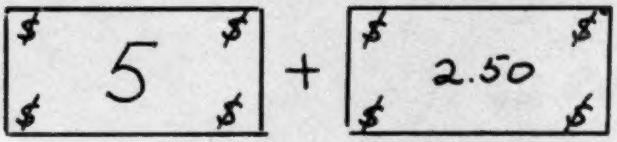
The hourly worker gets paid for every hour or part of an hour that he or she works. When you are hired, your boss or foreman will tell you how much you will earn *per hour.*

Some of you will punch time cards, others will sign in on cards or sheets. In many companies you will lose pay if you are over 3 minutes late.

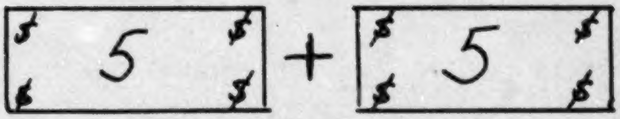
Forty hours is considered the standard work week, and, as stated above, you must be paid overtime for the hours that you work over 40. That rate is called time and a half.



Straight time



Time-and-a-half



Double time

If you have to work certain holidays which are not part of your regular schedule, you may be eligible for double-time pay. This is double your regular wage.

You can calculate your overtime pay by any one of three methods.

Method 1. DIVISION

Hourly rate: $2.00

Divide by 2 to find ½ of the hourly rate.

$$\begin{array}{r} 1.00 \\ 2\overline{)\,2.00} \end{array}$$

Add the $1.00 to the $2.00:

$$\begin{array}{rl} \$1.00 & \\ \underline{2.00} & \\ \$3.00 & \text{Time-and-a-half rate} \end{array}$$

Method 2. FRACTION

Hourly rate: $1.80

$$1\tfrac{1}{2} \times \$1.80 = \frac{3}{2} \times \frac{1.80}{1} = \frac{3}{\underset{1}{\cancel{2}}} \times \frac{\overset{.90}{\cancel{1.80}}}{1} =$$

$$\frac{2.70}{1} = \$2.70 \text{ Time-and-a-half rate}$$

Method 3. PERCENTAGE

Hourly rate: $2.60

1½ = 150% = 1.50

$$\text{Multiply} \quad \begin{array}{rl} \$2.60 & \\ \underline{\times 1.50} & \\ 13000 & \\ \underline{260} & \\ 3.9000 & \quad \text{Time-and-a-half rate: } \$3.90 \end{array}$$

WEEKLY WAGES

To calculate weekly wages: Multiply the hourly rate by the number of hours worked.

Hourly rate: $1.75 X 40 hours = $70.00

ASSIGNMENT

1. Compute the gross wages for the following workers:

	Name	Hourly rate	Hours worked	Gross wages
a.	James Jones	$1.90	40	______
b.	Linda Smith	$2.25	40	______
c.	Alan Ricco	$1.85	40	______
d.	John Flint	$2.70	40	______
e.	Diane Nunez	$2.60	38	______
f.	Susan Champino	$2.45	36	______
g.	Fred Mannheim	$3.20	40	______
h.	Fred Belski	$2.15	18	______
i.	Dennis Lovel	$3.60	23	______
j.	Jessie Wilson	$2.90	20	______

2. Total each person's hours for the week and figure out the gross pay for each one.

		Mon	Tues	Wed	Thurs	Fri	Sat	Total Hours	Rate	Gross
a.	John Jones	8	8	0	8	8	0	____	$1.75	____
b.	Tom Holtz	8	7	8	8	8	0	____	$2.25	____
c.	Roy Holmes	8	6	5	5	8	2	____	$2.40	____
d.	Gary Flynn	7½	8	7	8	8	0	____	$2.75	____
e.	Helen Dixon	6½	8	6	0	6	8	____	$3.35	____

3. John Nocks worked 45 hours last week. How many hours did he work overtime? ______

4. Debbie Bass worked 48 hours last week. How many hours did she work overtime? ______

5. Richard Marino worked 52 hours last week. How many hours did he work overtime? ______

6. Calculate the overtime hourly rate on the following:

$1.80 ____ $2.20 ____ $2.75 ____ $3.20 ____ $4.50 ____

7. Calculate the overtime rate and the double time rate:

$1.84 ____ $1.96 ____ $2.63 ____ $3.15 ____ $3.75 ____

____ ____ ____ ____ ____

8. Total the hours on the following and separate the pay for the regular hours from the overtime hours:

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Total Hours	Regular Hours	OT Hours
J. Lukacs	8	8	7	8	8	0	0			
R. Campos	9	9	9	9	9	0	0			
J. Jackson	9	8	9	10	8	8	0			
R. Loller	8	7½	9½	9	6	8	0			

9. Calculate the regular and overtime wages on the employees in problem 8.

	Rate	Regular	Overtime	Gross Pay
J. Lukacs	$2.40			
R. Campos	$2.25			
J. Jackson	$2.75			
R. Loller	$2.64			

10. Jerry Nelson earned $1.75 per hour. Assuming a 40-hour week, how much money did Jerry earn per week after getting a 15¢ hourly raise? ____

11. Jane Franks was earning $1.75 on her part-time job after school. She generally worked 16 hours a week. How much did she earn at $1.75? ____

She was hoping for a $.25 raise in the hourly rate. What would that bring her pay to? ____

12. Kenneth worked 40 hours a week at $2.20 per hour. Calculate his
    - weekly earnings ____
    - monthly earnings (assume 4 weeks) ____
    - yearly earnings (52 weeks) ____

13. Calculate the gross pay on the following:

D. North	45 hours	$3.75	____
T. Sullivan	48 hours	$2.80	____

R. Keith	44 hours	$4.50	________
D. Ernst	43½ hours	$3.50	________
R. Fischer	39 hours	$3.12	________
F. Lombardi	46 hours	$2.70	________
S. Rodriguez	40 hours reg 8 at double time	$2.40	________
T. Houston	48 hours plus 4 hours' double time	$3.65	________

Lesson 2 **Pay Day**

Objective: You will learn how to read your pay check and record stub.

Related Information:

When most employees get paid, they receive a long form or stub which contains a record of their pay and their deductions, along with their pay. It is necessary to read and understand your pay stub to make certain your boss has paid you the correct amount of money.

What the words mean on the stub:

Gross pay: The total amount of money you have earned.

40 hours × $2.50 = $100.00

Net pay: What you actually get to take home and spend.

Gross pay –	Deductions	= Net pay
$100.00 –	$29.20	= $70.80

Deductions: All the amount taken out (deducted or subtracted) from your pay. Some deductions are by law, like income taxes. Some require your approval, like savings bonds.

FICA, or Social security: (See the chapter on Social Security for further details.) Basically for your retirement.

Income tax: Money taken out of your pay for supporting the Federal government and all its programs.

Unemployment insurance: State insurance to pay you a weekly amount if you lose your job.

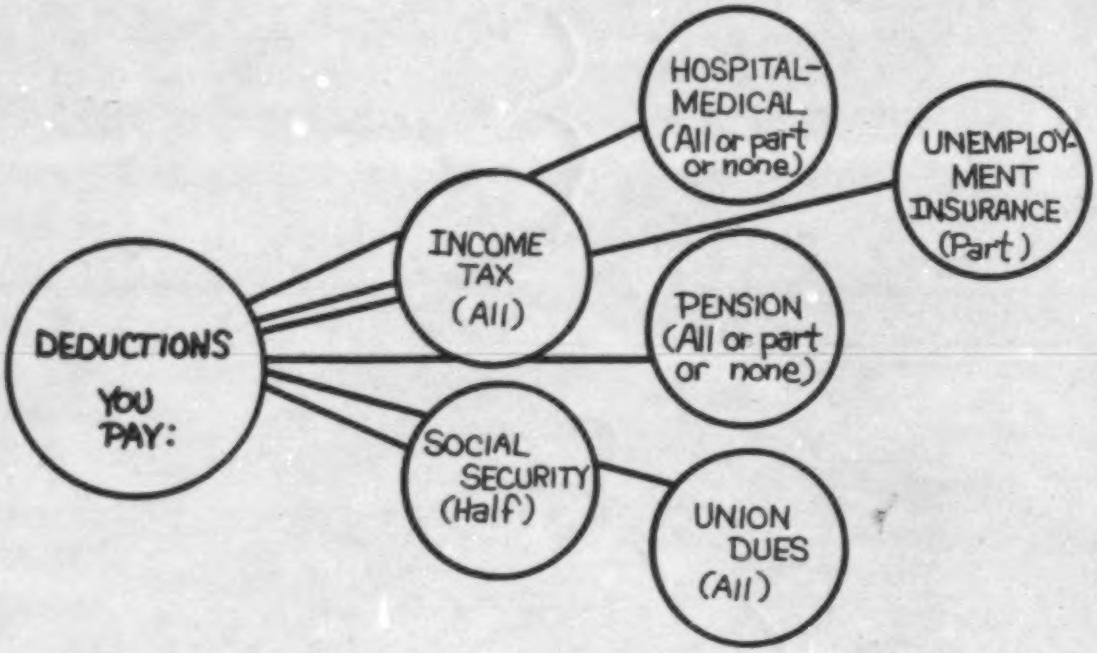
Blue Cross and Blue Shield or other medical insurance: Hospital payments, surgical payments, and possibly other medical payments for you and your family if you are ill. You may pay it all, your boss may pay part, or he may pay all.

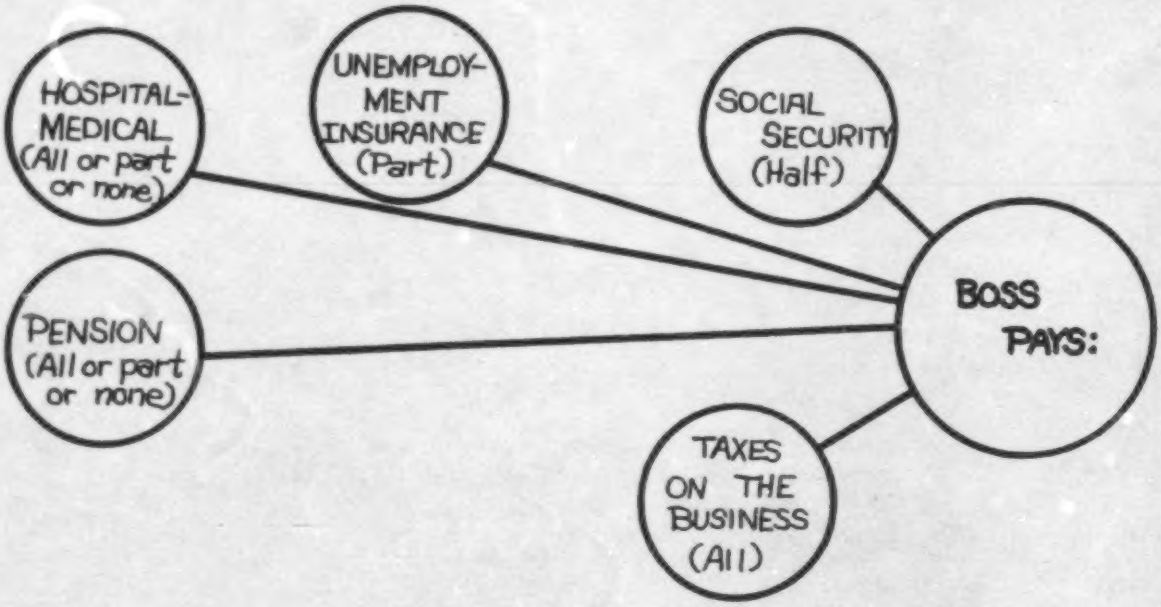
Pension: A company plan for retirement. Many of the larger companies have pension plans. You may contribute to the payments.

Union dues: Sometimes taken out of your pay; sometimes you pay the dues yourself.

Savings bond: A form of savings. You decide how much you want taken out of your pay and put into government bonds.

Some items above are taken out each week. Medical insurance may be taken out of your pay only once a month. Some companies pay each week, some pay every other week, and some pay twice a month.


DEDUCTIONS YOU PAY:
INCOME TAX (All)
HOSPITAL-MEDICAL (All or part or none)
UNEMPLOYMENT INSURANCE (Part)
PENSION (All or part or none)
SOCIAL SECURITY (Half)
UNION DUES (All)


HOSPITAL-MEDICAL (All or part or none)
UNEMPLOYMENT INSURANCE (Part)
SOCIAL SECURITY (Half)
PENSION (All or part or none)
BOSS PAYS:
TAXES ON THE BUSINESS (All)

Lesson 3 Tips

Objectives: You will learn the importance of tips in the earnings of the waiter or waitress.
You will learn how tips are computed.

Related Information:

In a previous unit, you learned how wages are computed and the importance of overtime. The waiter or waitress does not receive the minimum wage from the employer. The government, in setting up the minimum-wage laws to protect workers, took into account the fact that in some occupations workers earn considerable money through tips from customers. The government allows the employers in the restaurant business to pay less than the usual minimum wage for workers.

The minimum wage is determined by allowing for tips and for meals. The wage must be set so that the waiter or waitress must earn at least the statewide minimum wage when meal costs plus tips earned are added to the amount the employer pays. If the waiter or waitress does not earn at least the minimum wage altogether, the employer must raise his or her pay.

Good waiters and waitresses are worth much more than the minimum, and their tips can be considerable.

HOW TIPS ARE CALCULATED

There are no fixed amounts to tip a waiter or waitress. Most restaurant-goers follow an accepted standard. At present the standard is somewhere between 15% and 20% of the cost of the meal.

A good tip is recognition of good service and *must be earned.* If the customer were eating at home and wanted more bread, say, or butter, or a clean spoon, he or she could get up and get it. In a restaurant, the customer is completely dependent on the waiter or waitress. It is most annoying not to have your needs met. A good waitress knows when to bring more water, or catsup. She keeps an eye on the table and makes certain her customers' needs are met promptly.

The cost of the meal and the length of time you and your party occupy the table are also important factors. If you wish to talk after a meal, remember that you may be tying up the table and preventing the waitress from serving additional customers. You should make up for this in the size of the tip.

Take the total of the bill (less the tax)

Example:	$8.40
20% of $8.40	× .20
	$1.6800

You could leave $1.50, $1.60, $1.70, $1.75, or more.

The amount you actually leave may depend upon the change left when you pay your bill.

ASSIGNMENT:

1. Compute a 15% tip on the following bills:
   a. $4.50 __________
   b. $7.35 __________
   c. $6.90 __________
   d. $12.90 __________
   e. $9.20 __________
2. Compute a 20% tip on the following bills:
   a. $8.10 __________
   b. $15.50 __________
   c. $13.60 __________
   d. $18.85 __________
   e. $24.65 __________

UNIT VII – WAGES AND TAXES

Lesson 4 Social Security

Introduction:

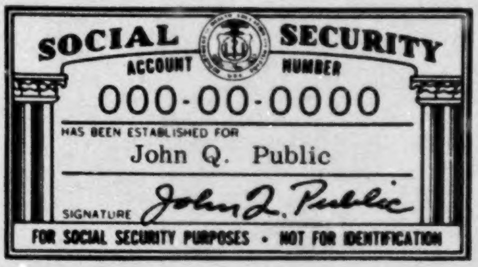
Taxes play an important role in everyone's life. You will pay taxes as a worker, and if you own your own business you will have to pay taxes on your profits.

Before you can make out your own income tax, you must learn about a number of things – social security, income tax forms, how tips are reported, etc. In this and the next two lessons we will talk about these things.

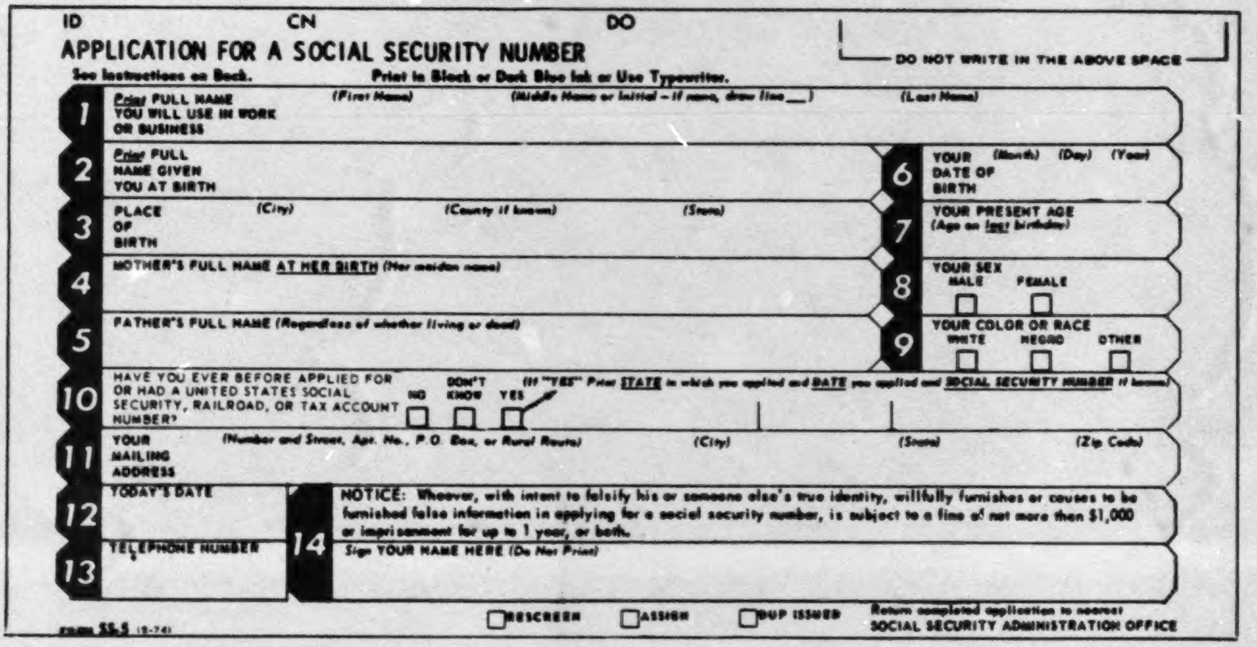
Objective: You will learn how the social security program affects you.
You will learn how to compute your FICA deduction.

Related Information:

An employer (the boss) is required to make certain deductions from an employee's wages. These include deductions for income taxes, social security taxes, unemployment insurance, and any other deductions authorized by the employee.



SOCIAL SECURITY
ACCOUNT NUMBER
000-00-0000
HAS BEEN ESTABLISHED FOR
John Q. Public
SIGNATURE John Q. Public
FOR SOCIAL SECURITY PURPOSES • NOT FOR IDENTIFICATION



ID CN DO

DO NOT WRITE IN THE ABOVE SPACE

APPLICATION FOR A SOCIAL SECURITY NUMBER

See Instructions on Back. Print in Black or Dark Blue Ink or Use Typewriter.

1 Print FULL NAME YOU WILL USE IN WORK OR BUSINESS (First Name) (Middle Name or Initial – if none, draw line __) (Last Name)

2 Print FULL NAME GIVEN YOU AT BIRTH

3 PLACE OF BIRTH (City) (County if known) (State)

4 MOTHER'S FULL NAME AT HER BIRTH (Her maiden name)

5 FATHER'S FULL NAME (Regardless of whether living or dead)

6 YOUR DATE OF BIRTH (Month) (Day) (Year)

7 YOUR PRESENT AGE (Age on last birthday)

8 YOUR SEX MALE ☐ FEMALE ☐

9 YOUR COLOR OR RACE WHITE ☐ NEGRO ☐ OTHER ☐

10 HAVE YOU EVER BEFORE APPLIED FOR OR HAD A UNITED STATES SOCIAL SECURITY, RAILROAD, OR TAX ACCOUNT NUMBER? NO ☐ DON'T KNOW ☐ YES ☐ (If "YES" Print STATE in which you applied and DATE you applied and SOCIAL SECURITY NUMBER if known)

11 YOUR MAILING ADDRESS (Number and Street, Apt. No., P.O. Box, or Rural Route) (City) (State) (Zip Code)

12 TODAY'S DATE

13 TELEPHONE NUMBER

14 NOTICE: Whoever, with intent to falsify his or someone else's true identity, willfully furnishes or causes to be furnished false information in applying for a social security number, is subject to a fine of not more than $1,000 or imprisonment for up to 1 year, or both.

Sign YOUR NAME HERE (Do Not Print)

FORM SS-5 (2-74) ☐ RESCREEN ☐ ASSIGN ☐ DUP ISSUED

Return completed application to nearest SOCIAL SECURITY ADMINISTRATION OFFICE

Remember: *Gross pay* is everything you earn. *Deductions* are subtracted from your pay, and you take home what is left – called *net pay.* Before 1940, workers had only what little they could save for their old age, or in case of illness, or for their families in case of their death. Out of the Depression and a change in attitude as to the responsibility of government, the Congress passed the Federal Insurance Contribution Act, which is known officially as FICA (the abbreviation), or as we all know it, the Social Security Act. Payments to the social security fund were first collected back in 1937; changes in the law have been made many times and are still made from time to time by Congress.

Computing social security is basically a percent problem. The Government takes a certain *percent* of your weekly earnings. Your employer collects this (and also matches the amount out of his own business receipts). The *rate* remains the same for any particular year, but as your weekly earnings go higher, the *amount deducted* will go higher.

There is a limit on how much you can get from the social security fund when you retire. The program was not designed to make you rich. There is therefore a limit on how much a person has to pay in to the fund each year. If this amount is reached in any year, your boss will stop taking out FICA.

HOW TO COMPUTE YOUR OWN SOCIAL SECURITY TAX

A person earns $86.00 a week (gross). How much will be deducted from his salary for social security tax? The rate as of 1975 was 5.85% of wages (up to $14,100 a year). So at this rate,

5.85% of $86.00 = .0585 X $86.00

Answer $5.03

Rework this problem using the rate in effect now.

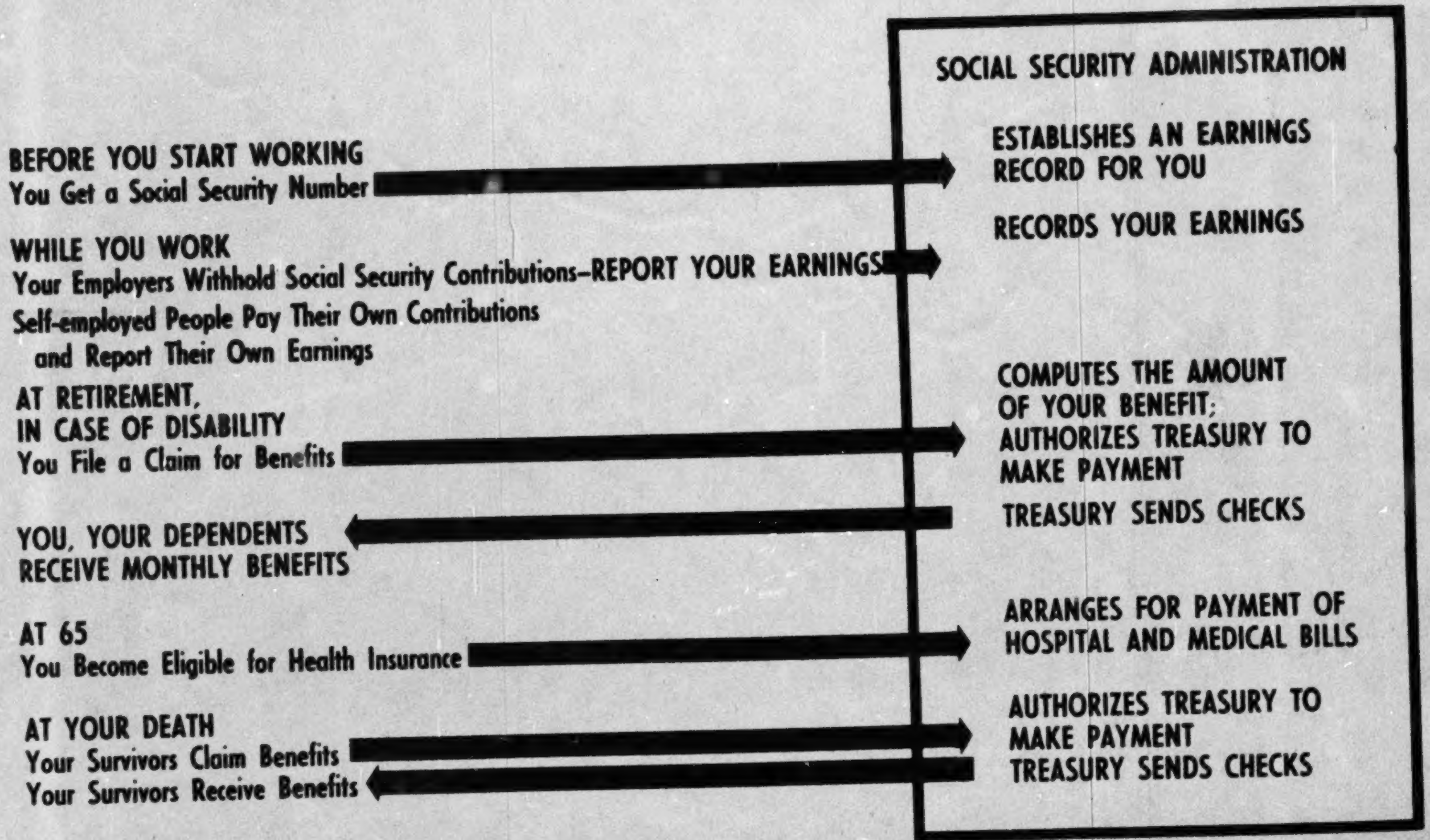
Answer:

ASSIGNMENT A:

Find the amount of the social security tax on each of the following wages at the current tax rate.

1. $86.70 ________
2. $93.95 ________
3. $97.60 ________
4. $104.40 ________
5. $126.30 ________

FROM SOCIAL SECURITY NUMBER
TO
SOCIAL SECURITY BENEFITS



BEFORE YOU START WORKING
You Get a Social Security Number

WHILE YOU WORK
Your Employers Withhold Social Security Contributions—REPORT YOUR EARNINGS
Self-employed People Pay Their Own Contributions
and Report Their Own Earnings

AT RETIREMENT,
IN CASE OF DISABILITY
You File a Claim for Benefits

YOU, YOUR DEPENDENTS
RECEIVE MONTHLY BENEFITS

AT 65
You Become Eligible for Health Insurance

AT YOUR DEATH
Your Survivors Claim Benefits
Your Survivors Receive Benefits

SOCIAL SECURITY ADMINISTRATION

ESTABLISHES AN EARNINGS
RECORD FOR YOU

RECORDS YOUR EARNINGS

COMPUTES THE AMOUNT
OF YOUR BENEFIT;
AUTHORIZES TREASURY TO
MAKE PAYMENT

TREASURY SENDS CHECKS

ARRANGES FOR PAYMENT OF
HOSPITAL AND MEDICAL BILLS

AUTHORIZES TREASURY TO
MAKE PAYMENT
TREASURY SENDS CHECKS

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Social Security Administration
1966 OASI-27

6. \$135.60 ________

7. \$146.75 ________

8. \$236.00 ________

HOW TO COMPUTE THE SOCIAL SECURITY TAX THROUGH USE OF A TABLE

The Federal Government supplies employers with tables for determining the FICA tax that is to be withheld. Using these tables rather than computing the tax as described above saves many hours of labor. Your instructor will explain how to use the tables. Now check the problems given to you in the previous assignment by using the tables. Do you think you will get the exact amount? Why or why not?

It is a good idea to check your own social security record from time to time to make sure that your earnings have been reported correctly. This is especially true if you change your job frequently. You can check your record by sending in a postcard that you can get from your local social security office.

SELF EMPLOYED

When you work for someone else, you pay half the full social security rate and your boss pays the other half. But if you are your own boss, instead of paying double for yourself, the government allows the self-employed person (boss) to pay only 1½ times.

WHAT ARE YOUR BENEFITS?

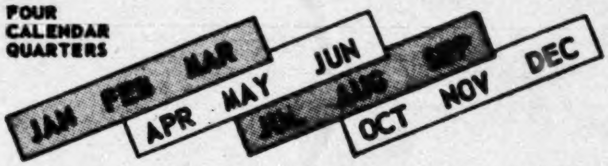
We have spent most of the time so far discussing how much we pay, but what do we get out of this?

1. When you retire, you will collect monthly social security payments.
2. If you become disabled and cannot work, you will collect monthly payments.
3. If you should die before you retire, your dependents would get social security payments.
4. 80% of your hospital bills will be paid through medicare (after you pay a fixed amount, called the deductible) as soon as you reach 65.
5. You will be able to collect on your doctor bills also, if you sign up and pay a small amount each month – also from age 65 on.
6. And if that doesn't work, your family will receive burial expenses for you.

HOW TO GET YOUR BENEFITS

To get social security payments for yourself and your family, you must first have *credit* for a certain amount of work under social security. *If you want to take out, you must have paid in to the fund.*

Social security credits are called "quarters of coverage." The year is divided into four parts (calendar quarters).



You can get social security credit for up to four quarters in a year. For an employee, a quarter of coverage means any calendar quarter in which he or she is paid at least $50.00.

If you work for yourself, you get four quarters of coverage for each year in which you have a net profit of at least $400.

If you are a teenager now, you will need at least 40 quarters of coverage at some time in your working career in order to be eligible for benefits upon retiring. (The requirement is different for those who get benefits because they are disabled; they need credit for 5 years of work in the 10 years just before becoming disabled.)

A worker who has met the employment requirements of the law may retire at age 65 or older and receive monthly retirement payments for the rest of his life. The amount he is entitled to at 65 is called his *primary benefit,* and it is based upon the average of his earnings during most of his working career.

Any worker may retire as soon as he or she reaches age 62, if he or she wishes. If he does, his monthly payments will be 80% of the primary benefit. For each month he waits after 62, his monthly payments go up.

Benefits are paid not only to a person who retires, but to his wife (or a dependent husband) when that person reaches 65 (or 62, at a smaller amount), and to any young or physically dependent children he may have. When a worker dies, whether or not he or she has retired, the widow (or dependent widower) collects payments as soon as he or she reaches 62 (or 60 for a widow, at a smaller amount). Even dependent parents, 62 or over, can collect benefits. If a worker dies leaving dependent children, his wife receives benefits (as well as the children) regardless of her age.

The social security fund also pays a lump sum upon the death of a worker, for funeral expenses.

A FEW POINTS TO KEEP IN MIND ABOUT SOCIAL SECURITY

1. Payments never come automatically. *Someone has to apply for them.* It may be the worker upon retirement or if disabled, or it may be a widow or dependent widower if the spouse dies. This person should contact the nearest social security office.

2. A person might be entitled to benefit payments on two accounts (for example, a widow who is eligible to collect on her own social security as well as on her late husband's). In such a case, only the larger of the two benefits will be paid.

3. A person who is collecting social security benefits may earn up to a certain amount (in 1975, it was $2520 a year) without having his social security payments reduced. If he is 72 or older, however, he may earn any amount without a penalty.

ASSIGNMENT B:

1. Name five deductions your boss might take out of your pay. ____________________
____

2. Which deductions *must* he take out of your pay? ____________________
____

3. Which do you take home, gross pay or net pay? ____________

4. FICA is an abbreviation for: ____________________________________

5. What percent (rate) of your gross pay is taken out for FICA? __________

6. FICA is not deducted from gross earnings above __________

7. If you earned $125.00 last week, how much FICA would the boss have taken out of your pay? __________

8. Social Security deductions started in 1937 and the rate has always been the same. __True __False.

9. You can get a social security card from the ____________________________

10. You may have more than one social security number. __Yes __ No.

11. If you lose your social security card you must apply for a new number. __ True __ False

12. Name five types of benefit payments from social security. ____________________
____

13. What is a quarter of coverage? ____________________________________
____

14. How many quarters of coverage will a teenager have to work to be eligible for FICA when he or she retires? __________

15. At what age can a worker retire and collect full benefits? ____________

16. At what age can a worker retire and collect reduced benefits? ____________

17. How do you get benefits from social security? ______________________________________

18. Can you work and still collect social security benefits? ______________________________

This man collects Social Security.

You don't have to be retirement age to get social security.

Take a young man like this.

What happens to him if his father dies prematurely? How does his mother raise him?

Savings and insurance? Many families have them.

But nearly every family has social security. And this year, social security is helping over three million children and their widowed mothers.

A young widow with two children, whose husband earned $100 a week on the average, for example, receives $348.80 a month in survivors benefits.

And full-time students who are survivors or children of disabled or retired workers may collect benefits until they reach 22. Social security benefits now being paid to these students amount to more than the scholarships at all colleges and universities in the country.

If you think social security helps when you retire, you're right. But it's also something you can depend on now. For further information, contact any social security office.

Social security pays four benefits: survivors, disability, retirement, and Medicare.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE • Social Security Administration

ASSIGNMENT C:

You will compute the net pay for six different workers, using the paycheck stub given after each problem.

1. Compute overtime pay at time and one-half.
2. Use "Gross Wages" as the basis for all deductions.
3. Look up the deduction for the Federal income tax on the chart on page 227.
4. Calculate the FICA tax at your current rate of tax.
5. Assume an unemployment-insurance tax of 1%.
6. Any other deduction should be named, with the amount, under "Other."

1. Brenda worked 40 hours last week at $2.50 an hour. In addition to the usual deductions, $1.50 was taken out for Blue Cross. Find her net pay.

Total hours	Reg. hours	O.T. hours	Reg. Pay	O.T. Pay	Gross Wages	Federal Income Tax	F.I.C.A.	U/I	Other

Net Pay: ____________________

2. Wayne worked 40 hours last week at $2.20 an hour.

Total hours	Reg. hours	O.T. hours	Reg. Pay	O.T. Pay	Gross Wages	Federal Income Tax	F.I.C.A.	U/I	Other

Net Pay: ____________________

3. Sally worked 48 hours at $3.40 an hour.

Total hours	Reg. hours	O.T. hours	Reg. Pay	O.T. Pay	Gross Wages	Federal Income Tax	F.I.C.A.	U/I	Other

Net Pay: ____________________

4. Brian worked 45 hours at $3.75 an hour.

Total hours	Reg. hours	O.T. hours	Reg. Pay	O.T. Pay	Gross Wages	Federal Income Tax	F.I.C.A.	U/I	Other

Net Pay: ____________________

5. Jean worked 45 hours at $4.75 an hour. She had extra deductions for union dues, $2.00, and for a savings bond, $6.25.

Total hours	Reg. hours	O.T. hours	Reg. Pay	O.T. Pay	Gross Wages	Federal Income Tax	F.I.C.A.	U/I	Other

Net Pay: ______________________

6. Phil worked 48 hours at $3.80 an hour.

Total hours	Reg. hours	O.T. hours	Reg. Pay	O.T. Pay	Gross Wages	Federal Income Tax	F.I.C.A.	U/I	Other

Net Pay: ______________________

SINGLE Persons — WEEKLY Payroll Period

And the wages are—		Number of withholding exemptions claimed is—	
At least	But less than	0	1
		The amount of income tax to be withheld shall be	
$0	$11		$0
11	12		0
12	13		0
13	14		0
14	15		0
15	16		0
16	17		0
17	18		0
18	19		0
19	20		0
20	21		0
21	22		0
22	23		0
23	24		0
24	25		0
25	26		.10
26	27		.20
27	28		.40
28	29		.50
29	30		.60
30	31		.80
31	32		.90
32	33		1.10
33	34		1.20
34	35		1.30
35	36		1.50
36	37		1.60
37	38		1.80
38	39		1.90
39	40		2.00
40	41		2.20
41	42		2.30
42	43		2.50
43	44		2.60
44	45		2.70
45	46		2.90
46	47		3.00
47	48		3.20
48	49		3.30
49	50		3.40
50	51		3.60
51	52		3.80
52	53		4.00
53	54		4.20
54	55		4.30
55	56		4.50
56	57		4.70
57	58		4.90
58	59		5.10
59	60		5.20
60	62		5.50
62	64		5.90
64	66		6.20
66	68		6.60
68	70		7.00
70	72		7.30
72	74		7.70
74	76		8.00
76	78		8.40
78	80		8.80
$80	$82		$9.10
82	84		9.50
84	86		9.80
86	88		10.20
88	90		10.60
90	92		11.00
92	94		11.40
94	96		11.90
96	98		12.30
98	100		12.70
100	105		13.40
105	110		14.50
110	115		15.50
115	120		16.60
120	125		17.60
125	130		18.70
130	135		19.70
135	140		20.80
140	145		21.80
145	150		22.90
150	160		24.50
160	170		26.60
170	180		28.70
180	190		30.80
190	200		32.90
200	210		35.00
210	220		37.10
220	230		39.30
230	240		41.60
240	250		43.90
250	260		46.60
260	270		49.30
270	280		52.00
280	290		54.80
290	300		57.90

Objective: You will learn some of the terms and forms used in figuring out income tax.

Related Information:

First of all, you should understand how the income-tax system works. Each week your boss witholds (deducts) a certain amount of income tax from your pay. The total withheld for the year will not be the *exact* amount you are required to pay for the year, but it should be very close. Before April 15 of the following year, you have to send the Internal Revenue Service (tax collector) a form that tells the *exact amount of your tax* for the year. If you have paid more than this amount in withholding taxes, the IRS will send you a *refund;* but if the deductions from your pay did not come to this amount, then you must send the *balance* to the IRS along with the form.

If by some chance you owe no tax at all but your boss withheld some of your pay for income taxes, then you should file a tax return to get a refund.

Each year the Federal government makes available to all schools information on how to fill out an income tax form. Changes take place from year to year, but certain basics remain the same. We will discuss the basics in this unit, leaving it up to your instructor to fill you in on the latest changes.

Every resident of the United States who had an income last year of $2050 if single (as of 1975) must report the amount of his or her income to the Internal Revenue Service. Married couples must report if their income was $2800 or more.

YOU MUST FILE A TAX FORM:

a. If you earned over the required amount ($2050 in 1975, if you were single).

b. If you earned less than the required amount but taxes were deducted from your pay. You will then get a refund.

c. If you received tips on which FICA was not taken out, regardless of the amount you earned.

d. If you earned $400 or more in your own business.

e. If you had gross income of $750 or more, had unearned income (such as interest payments), and can be claimed as a dependent by another taxpayer.

THE W-4 and W-4E FORMS

Your employer (boss) must know how much to take out of your pay for income tax. When you start a job, your employer has you fill out a W-4 form. It is called the Employee's Withholding Allowance Certificate.

When you fill out the W-4 form, you indicate how many *allowances* (also called exemptions) you have. An allowance is a *person who depends on you for money.*

Allowances: Your wife
Your children
Parents
Yourself

You can claim an allowance for someone who is dependent on you for money to live on. If your wife works and she claims herself, then you cannot claim her. If your children are over a certain age and working, you cannot claim them. If you are not providing aid for your parents, you cannot claim them.

You are taxed on the amount of money you earn, but the more allowances (dependents) you have, the less tax you pay. You are permitted to claim fewer allowances than you are entitled to (and more taxes will be deducted from your pay), but you cannot claim more.

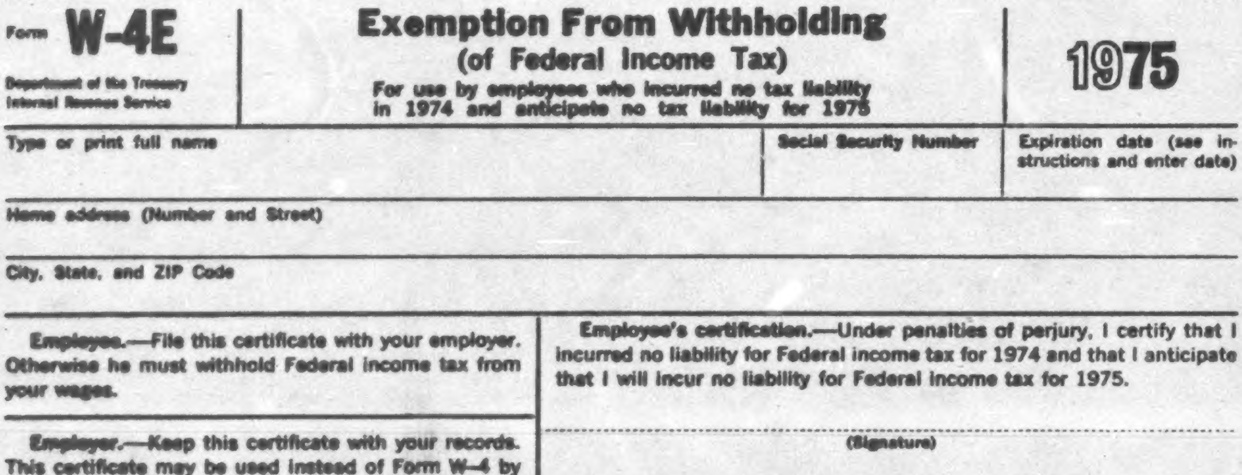
Your W-4 form is kept in your employer's office. If the number of your allowances changes, you must ask to fill out a new form.

Changes may occur when: You get married,
You have children,
You help your parents.

HOW TO FILL OUT THE W-4 FORM (see page 230)

1. Print your full name.
2. Enter your social security number.
3. Enter your home address.
4. Enter city, state, and zip code.
5. Choose the allowances that fit your case (on upper portion of form).
6. Add up your allowances and enter the number on the form.
7. Date and sign the certificate.

THE W-4E FORM



Form **W-4E**
Department of the Treasury
Internal Revenue Service

Exemption From Withholding
(of Federal Income Tax)
For use by employees who incurred no tax liability in 1974 and anticipate no tax liability for 1975

1975

Type or print full name

Social Security Number

Expiration date (see instructions and enter date)

Home address (Number and Street)

City, State, and ZIP Code

Employee.—File this certificate with your employer. Otherwise he must withhold Federal income tax from your wages.

Employer.—Keep this certificate with your records. This certificate may be used instead of Form W–4 by those employees qualified to claim the exemption.

Employee's certification.—Under penalties of perjury, I certify that I incurred no liability for Federal income tax for 1974 and that I anticipate that I will incur no liability for Federal income tax for 1975.

(Signature)

(Date)

Employee's Withholding Allowance Certificate

The explanatory material below will help you determine your correct number of withholding allowances, and will indicate whether you should complete the new Form W–4 at the bottom of this page.

How Many Withholding Allowances May You Claim?

Please use the schedule below to determine the number of allowances you may claim for tax withholding purposes. In determining the number, keep in mind these points: If you are single and hold more than one job, you may not claim the same allowances with more than one employer at the same time; If you are married and both you and your wife or husband are employed, you may not claim the same allowances with your employers at the same time. A nonresident alien other than a resident of Canada, Mexico or Puerto Rico may claim only one personal allowance.

Figure Your Total Withholding Allowances Below

(a) Allowance for yourself—enter 1 . . . . ______

(b) Allowance for your wife (husband)—enter 1 . . . . ______

(c) Allowance for your age—if 65 or over—enter 1 . . . . ______

(d) Allowance for your wife's (husband's) age—if 65 or over—enter 1 . . . . ______

(e) Allowance for blindness (yourself)—enter 1 . . . . ______

(f) Allowance for blindness (wife or husband)—enter 1 . . . . ______

(g) Allowance(s) for dependent(s)—you are entitled to claim an allowance for each dependent you will be able to claim on your Federal income tax return. Do not include yourself or your wife (husband)* . . . . . ______

(h) Special withholding allowance—if you have only one job, and do not have a wife or husband who works—enter 1 . . . . ______

(i) Total—add lines (a) through (h) above . . . . ______

If you do not plan to itemize deductions on your income tax return, enter the number shown on line (i) on line 1, Form W–4 below. Skip lines (j) and (k).

(j) Allowance(s) for itemized deductions—If you do plan to itemize deductions on your income tax return, enter the number from line 5 of worksheet on back . . . . ______

(k) Total—add lines (i) and (j) above. Enter here and on line 1, Form W–4 below . . . . ______

*If you are in doubt as to whom you may claim as a dependent, see the instructions which came with your last Federal income tax return or call your local Internal Revenue Service office.

See Table and Worksheet on Back if You Plan to Itemize Your Deductions

Completing New Form W–4

If you find that you are entitled to one or more allowances in addition to those which you are now claiming, please increase your number of allowances by completing the form below and filing with your employer. If the number of allowances you previously claimed decreases, you must file a new Form W–4 within 10 days. (Should you expect to owe more tax than will be withheld, you may use the same form to increase your withholding by claiming fewer or "0" allowances on line 1 or by asking for additional withholding on line 2 or both.)

▼ Give the bottom part of this form to your employer; keep the upper part for your records and information ▼

Form **W-4**
(Rev. Aug. 1972)
Department of the Treasury
Internal Revenue Service

Employee's Withholding Allowance Certificate

(This certificate is for income tax withholding purposes only; it will remain in effect until you change it.)

Type or print your full name	Your social security number
Home address (Number and street or rural route)	Marital status ☐ Single ☐ Married
City or town, State and ZIP code	(If married but legally separated, or wife (husband) is a nonresident alien, check the single block.)

1 Total number of allowances you are claiming . . . . ______

2 Additional amount, if any, you want deducted from each pay (if your employer agrees) . . . . $

I certify that to the best of my knowledge and belief, the number of withholding allowances claimed on this certificate does not exceed the number to which I am entitled.

Signature ▶ .... Date ▶ ...., 19........

If you did not earn enough money last year to pay taxes, and you don't expect to earn enough this year to pay taxes, you may ask to fill out the W-4E Form instead of the W-4. No taxes will be taken out of your pay if you fill out this form.

When you get a new job, you indicate the number of allowances by filling out the W-4 or W-4E form. You also give your boss your social security number so he can take out FICA for you. If you are in a job where you receive tips, you have something else to consider.

TIPS

The tips you receive are yours,but you must report them in order for your boss to take out the proper amount of social security and income tax from your pay. You do not have to pay income tax on your tips if they amount to less than $20 a month. The social security tax, however, must be paid on any amount you earn in tips up to the maximum amount indicated for the year.

In most places you will be expected to report your tips for the month by the 10th of the next month, in order for your boss to make the proper deductions for taxes and FICA. Other methods have been worked out, however, and you should check your tax guide for information on these.

To help you report your tips, the government provides a little booklet. This booklet contains forms 4070 and 4070A.

Form 4070A (see page 233) provides you with places to record the tips you take in each day of the month.

Form 4070 is used to report to your employer the total amount of your tips for the month.

YOU fill out form 4070A; it is used each day.

YOU fill out form 4070 once a month by taking the month's total from form 4070A.

Examples:

1. You work for Watson's Restaurant during the month and receive $75 in tips. Since your tips exceed $20 for the month, the entire $75 must be reported to your employer. He will deduct income tax and social security tax for the tips from your wages.
2. Your work for Watson's Restaurant during the month and receive $17 in tips. In that same month you work for Parkview Restaurant and get $14 in tips. Even though your tips amount to a total of $31, you are not required to report them to either employer, since you had less than $20 in tips in each job.

3. If you received $22 in tips from Watson's Restaurant and $14 in tips from Parkview Restaurant, you must report the $22 to Watson's Restaurant. You are not required to report the $14 to Parkview Restaurant.

4. If you received $22 in tips from Watson's Restaurant and $32 in tips from Parkview Restaurant, you must report both the $22 to Watson's Restaurant and the $32 to Parkview Restaurant.

Tip splitting: Only those tips *you* receive on your own behalf are counted. Where employees split tips (for example, where waiters give a portion of their tips to the busboys), each employee reports only his share to his employer.

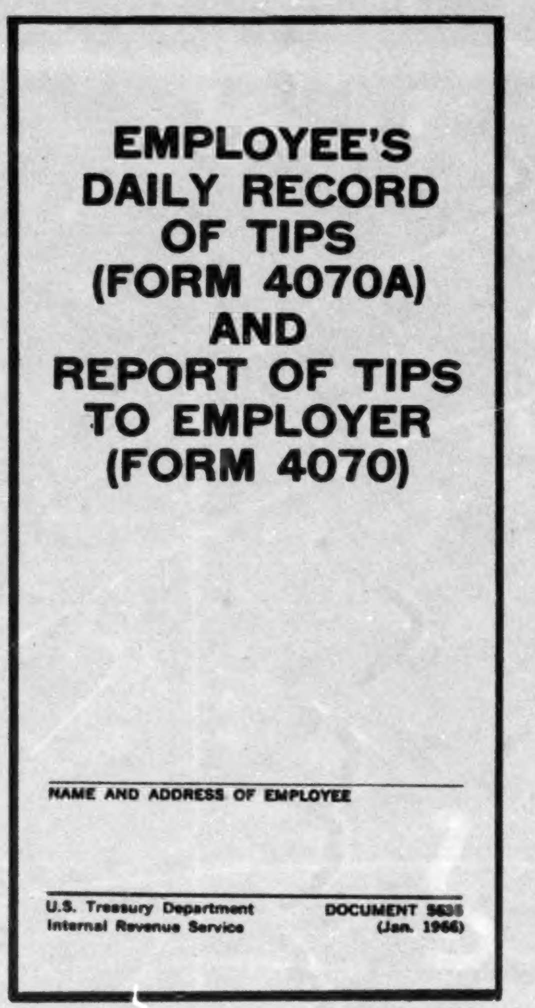
Remember: You will have to pay a social security tax on *all* your tips (even though you do not pay income tax on tips of less than $20 for the month). This is to your advantage, because your social security benefits someday will be based on your *total* earnings, not just your taxable earnings. (See page 239)

Your employer does not have to match your social security payments on any of your tip income. He pays the FICA tax on only the wages that *he* pays you.

ASSIGNMENT: You earned the following tips for the month of January. Fill out form 4070A and form 4070.

January 1.	closed	January 17.	off
January 2.	$7.50	January 18.	$4.20
January 3.	off	January 19.	$4.50
January 4.	$5.20	January 20.	$6.00
January 5.	$6.25	January 21.	$6.90
January 6.	$7.10	January 22.	$5.10
January 7.	$6.30	January 23.	$9.30
January 8.	$6.95	January 24.	off
January 9.	$8.00	January 25.	$5.80
January 10.	off	January 26.	$6.25
January 11.	$5.80	January 27.	$5.95
January 12.	$6.20	January 28.	$9.05
January 13.	$4.30	January 29.	$7.25
January 14.	$5.35	January 30.	$7.90
January 15.	$8.65	January 31.	off
January 16.	$9.25		

THIS IS YOUR TIP BOOKLET. Under the front cover are your instructions.



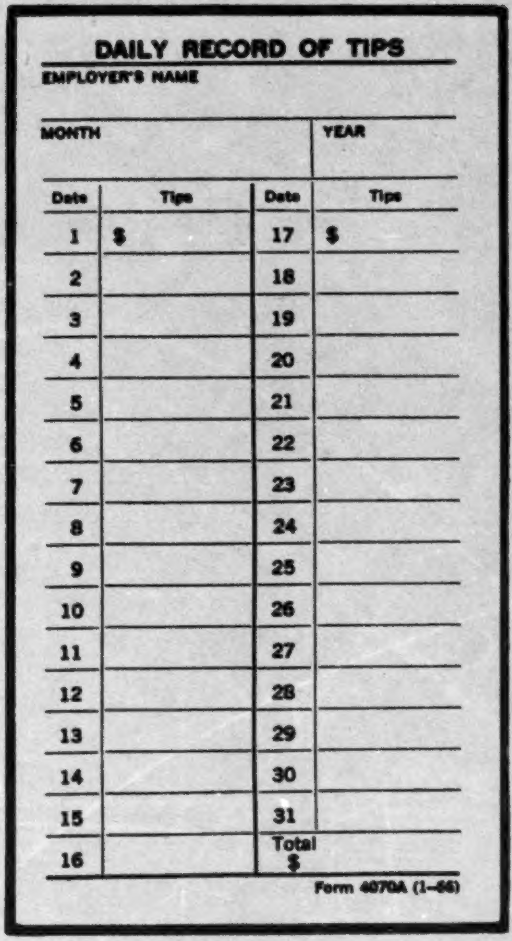
EMPLOYEE'S DAILY RECORD OF TIPS (FORM 4070A) AND REPORT OF TIPS TO EMPLOYER (FORM 4070)

NAME AND ADDRESS OF EMPLOYEE

U.S. Treasury Department
Internal Revenue Service

DOCUMENT 5635
(Jan. 1966)

Form 4070A, shown below, is your daily record of tips.



DAILY RECORD OF TIPS

EMPLOYER'S NAME

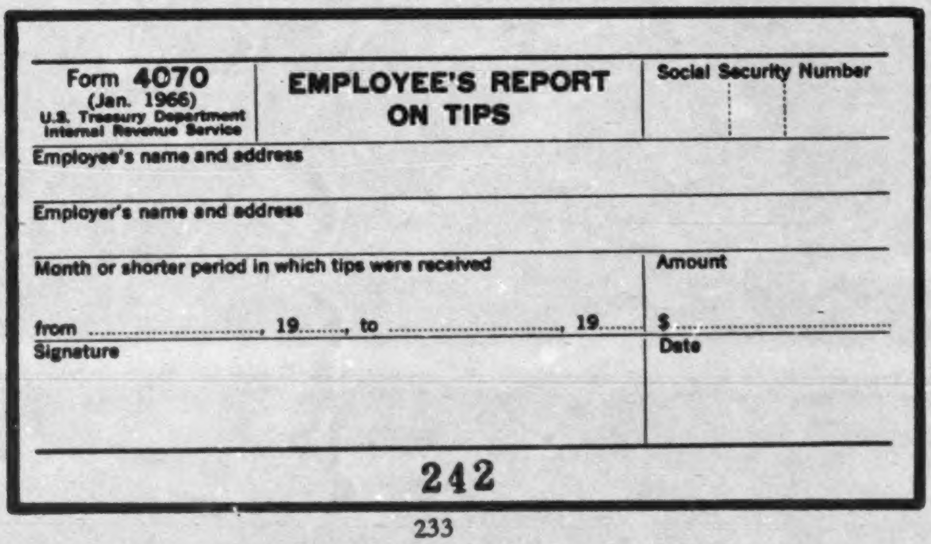
MONTH

YEAR

Date	Tips	Date	Tips
1	$	17	$
2		18	
3		19	
4		20	
5		21	
6		22	
7		23	
8		24	
9		25	
10		26	
11		27	
12		28	
13		29	
14		30	
15		31	
16		Total $	

Form 4070A (1-66)

Form 4070, shown below, is filled out by you and turned in to your boss each month.



Form **4070**
(Jan. 1966)
U.S. Treasury Department
Internal Revenue Service

EMPLOYEE'S REPORT ON TIPS

Social Security Number

Employee's name and address

Employer's name and address

Month or shorter period in which tips were received

from ...., 19........, to ...., 19........

Amount

$ ....

Signature

Date

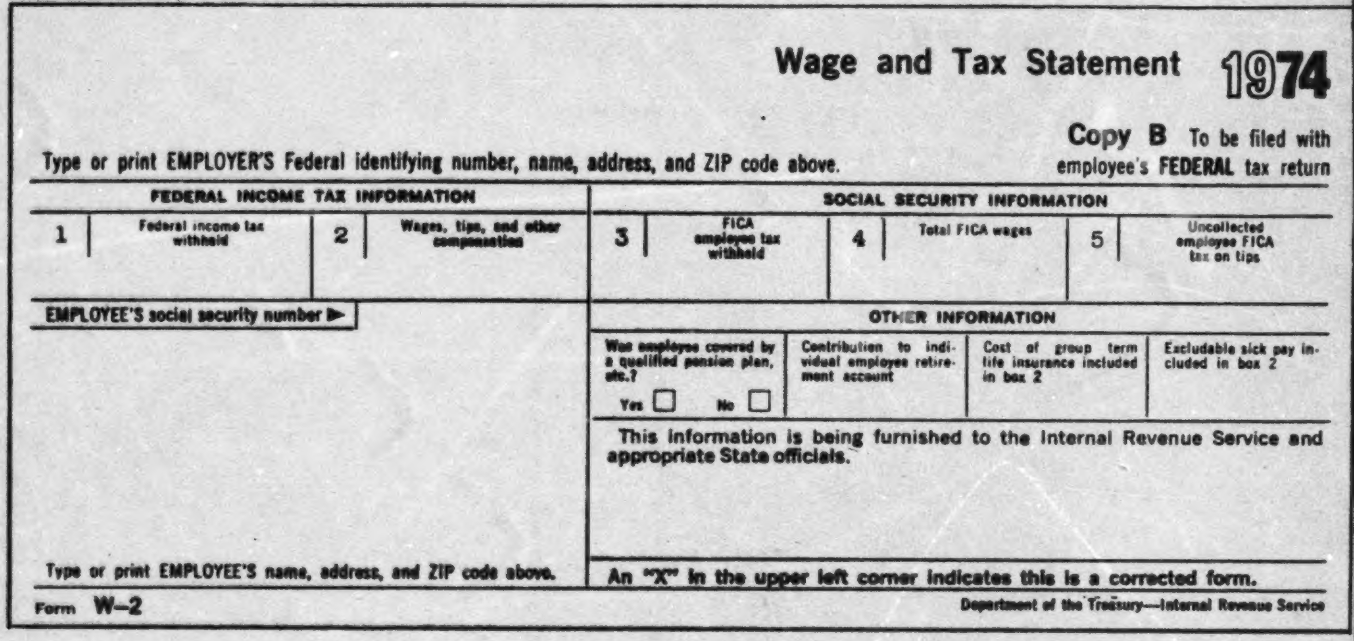
Lesson 6 — The Tax Form

Objective: You will learn what information has to be included on your tax form.

Related Information:

After the end of the year, each employer (boss) sends each employee (worker) two copies of the W-2 form, called the **Wage and Tax Statement.**

This is what it looks like:



Wage and Tax Statement 1974

Copy B To be filed with employee's **FEDERAL** tax return

Type or print EMPLOYER'S Federal identifying number, name, address, and ZIP code above.

FEDERAL INCOME TAX INFORMATION				SOCIAL SECURITY INFORMATION					
1	Federal income tax withheld	2	Wages, tips, and other compensation	3	FICA employee tax withheld	4	Total FICA wages	5	Uncollected employee FICA tax on tips

EMPLOYEE'S social security number ▶

OTHER INFORMATION

Was employee covered by a qualified pension plan, etc.? Yes ☐ No ☐	Contribution to individual employee retirement account	Cost of group term life insurance included in box 2	Excludable sick pay included in box 2

This information is being furnished to the Internal Revenue Service and appropriate State officials.

Type or print EMPLOYEE'S name, address, and ZIP code above.

An "X" in the upper left corner indicates this is a corrected form.

Form **W–2**

Department of the Treasury—Internal Revenue Service

You cannot fill out your tax form until you get your copy of this W-2 form.

It contains:

1. The amount of money withheld by the employer for your income tax. (You must know this to see whether you owe the government money or it owes you money.)
2. Your total earnings for the year. (You must know this to calculate your taxes.)
3. FICA (Social Security). How much you paid out for social security.
4. Any amount of reported tips that the employer did not deduct taxes for. (You will have to pay the taxes yourself.)

You will receive a W-2 form from each employer you worked for last year. You have to add them together to get the complete picture of your total earnings.

You *must* attach a copy of your W-2 form(s) to your income-tax form.

You keep one copy of each W-2 form for your own records.

Actually, four copies are made of each W-2 form:

Your boss sends one to the Internal Revenue Service.
Your boss keeps one.
Your boss sends two to you. Then you send one to the IRS and you keep one for your own records.

Your instructor will get copies of the latest income-tax form from the Internal Revenue Service, and the class will go over the form together.

PERSONAL EXEMPTIONS OR ALLOWANCES

Exemptions were discussed when we looked at the W-4 form.

In 1975 you were allowed a $750 deduction for each exemption (allowance) you claimed, including yourself. This amount changes from time to time.

DEDUCTIONS

There are different methods of claiming *deductions*. The more deductions you have, the less tax you will have to pay.

1. You do not have to pay any tax at all until you earn $2050 (as of 1975). This gives you a *minimum standard deduction.*

2. As your earnings go higher, you are entitled to use the *normal standard deduction* (15% of income as of 1975). Instead of listing each deductible item, you simply claim 15% of your income and save yourself a lot of work.

3. If you have deductible expenses that amount to over 15% of your income, you must list them separately ("itemize" them) in order to claim them.

4. Itemized (listed) deductions

   Under this heading you can claim certain amounts contributed to:

   - charities
   - religious affiliation
   - first aid and fire squads
   - Boy Scouts, Girl Scouts
   - Red Cross
   - United Fund
   - Cancer fund, Heart fund, other health agencies

   Half of the cost of medical insurance that you paid is deductible.

   Doctor and other medical and dental bills may be claimed, but only the part that is over 3% of your income.

   Union dues are deductible.

Expenses for care of the children of working parents are deductible.

Restaurant workers can claim money for uniforms and shoes which can only be used on the job.

There are many other deductions also – taxes paid, interest paid, etc.

Many people pay these bills by check so they have a record at income tax time. The IRS can call you in at any time and question your deductions. You must have proof that you actually paid for these things.

The IRS includes instructions when it sends you your form. If you have problems that the instructions don't cover, you can consult one of the many publications issued by the government or private companies on filling out your income tax form. You can look up questions on: exemptions, deductions, uniforms, and many, many more. The Federal Government publishes "Your Federal Income Tax." It is available at no cost at most IRS offices.

In addition, your local office of the IRS will help you fill out your tax form at no charge. Or if you have just a question or two, there are toll-free numbers to call in all areas of the country.

If you lose your form, you can call your employer and he can make up a duplicate.

In filling out your income tax, you need the picture for the whole year. If you should get a new dependent (a baby) the last week of the year, you would get credit for an exemption for the whole year. This would almost certainly result in your getting a refund from the IRS.

As mentioned before, the government has made it possible for people earning less than $2050 a year (as of 1975) to fill out a W-4 E form. *If* they earned less than that the previous year and expect to earn less than that this year, they can fill out this special form and the boss will not withhold any taxes.

If you worked for more than one employer, they may each have taken out the proper amount of FICA, but together the deductions may have been over the maximum limit. You will then be entitled to a refund of the overpayment when you file your income-tax form.

Those who work for themselves, like a restaurant owner, must estimate (figure out as accurately as possible) their earnings for the year ahead and then pay one-quarter of this amount every 3 months. Then they "settle up" with the IRS by April 15 of the next year, just like wage-earners.

Wage- and salary-earners must also report extra income, such as *interest* from savings accounts or bonds, and *dividends* from stocks. You know that you must also include income from tips. Any other sources of income must also be reported – even winnings from a lottery or gambling.

ASSIGNMENT:

1. If you (a single person) earned over ________ last year, your must pay income taxes.

2. If you earned $500. last year, would you have to file an income tax return? ________

3. Do you have to report tips and pay on them? ____________

4. Do you have to file a statement if your parents are filing? __________

5. How does your boss know how much to take out of your pay for tax? ____________

   ____

6. Who are some tax allowances? ____

7. What is the difference between a W-4 and W-4E form? ______________________

   ____

8. When do you make changes in your W-4 form? ____________________________

   ____

9. To whom do you report your tips? __________________________

10. If you earn less than _______ a month in tips, you do not have to report them.

11. Does your boss have to take out FICA on your tips? ___________

12. What is the number of the form you use to record your tips on? ___________

13. There are two, basic types of income tax forms. What numbers do they have?

    ____

14. When a husband and wife are both included on one tax form, it is called a ________ return.

15. What is the W-2 form? How many copies do you get? What do you do with them?

    ____

    ____

16. What information is on the W-2 form? ______________________________

    ____

17. When you fill out the long form and itemize deductions, what are some of the deductions you can claim? ______________________________

____

____

18. What do we mean by the term "standard deduction"? ______________________________

19. What is an estimated tax form? ______________________________

____

20. What is a dividend? ______________________________

21. What is the profit you earn on a savings account called? ______________________________

22. Do you have to report extra income on your return? ______________________________

23. How much is each exemption (allowance) worth today? ______________________________

Form **4137**
Department of the Treasury
Internal Revenue Service

Computation of Social Security Tax on Unreported Tip Income

(Under Federal Insurance Contributions Act)
▶ Attach to Form 1040.

1974

Name of person who received tip income (as shown on social security card)

Social security number

Names of employers (If more space needed, list on other side)

1 Total cash tips received in 1974 (Note: Include December 1973 tips reported to your employer from January 1, 1974, through January 10, 1974. Do not include December 1974 tips reported to your employer from January 1, 1975, through January 10, 1975). See Instruction D		
2 Total cash tips reported to your employer in 1974		
3 Balance (line 1 less line 2). Enter here and include in total on Form 1040, line 9		
4 Total cash tips received but not reported to employer because less than $20 in a calendar month		
5 Balance (line 3 less line 4). Enter here and in item D below		
6 Largest amount of wages (including tips) subject to social security tax	$13,200 00	
7 Total "F.I.C.A. Wages" shown on Form W-2. Enter here and in item E, below (include "covered" wages received as an agricultural or household employee)		
8 Balance (line 6 less line 7). If "zero," do not complete the rest of this form or Schedule U below		
9 Unreported tips subject to F.I.C.A. tax—line 5 or 8, whichever is smaller. Enter here and give details in items A(1) through A(5) below		
10 Multiply the amount on line 9 by 5.85 percent. Enter here and on Form 1040, line 59		

Do Not Detach

Important.—The amounts reported on the form below are for your social security record. This record is used in figuring any benefits, based on your earnings, payable to you, your dependents, and your survivors. Fill in each item accurately and completely.

SCHEDULE U
(Form 1040)
Department of the Treasury
Internal Revenue Service

U.S. Schedule of Unreported Tip Income

For crediting to your social security record

1974

A Taxable tip income not reported to employer from line 9. See Instruction G.

(1) Jan.–Feb.–Mar.	$
(2) April–May–June	
(3) July–Aug.–Sept.	
(4) Oct.–Nov.–Dec.	
(5) Total of lines A(1)–A(4)	$

Please Do Not Write in This Space

B Occupation

Social security number of person named below ⟶

C Print or type name of person who received tip income as shown on social security card

Address (number and street)

City, State, and ZIP code

D Enter amount from line 5, if any $

E Enter amount from line 7 $

Do not write in this space
DLN–

UNIT VIII – BUSINESS RECORDS

Lesson 1 — Profit and Loss Statement

Objective: You will learn how a businessman keeps track of how his business is making out.

Related Information:

Many small businesses fail because they are not operated efficiently. A businessman must know his costs, and in order to know them he must keep adequate records of what is going on.

We were introduced to some of these records when we discussed the costing of recipes and markup. The businessman must know how much to mark up in order to cover his costs and make a profit.

Before we get too far, let's review some words we will have to use to discuss this subject:

1. **Gross income:** All the money taken in by the business (the cash register receipts).
2. **Expenses:** All the money the businessman must pay out to keep in business. Here are some of the expenses:

   Materials used in processing foods
   Equipment, such as pots and pans
   Machinery
   Rent or property taxes (if he owns the property)
   Heat – gas and/or oil
   Electricity
   Telephone
   Materials used in cleaning
   Lawyer or accountant
   Printing for menus
   Garbage disposal
   Labor costs (pay to workers)
   Repairs
   Interest on money borrowed
   City and state taxes
3. **Net income:** What he has left after *subtracting* his expenses from his gross income.

BASIC RECORDS

In this and the following lesson you will learn about some of these records. They include:

The balance sheet

A sheet containing information on what the company is worth at a particular time – the value of the restaurant, money in the bank, debts owed, etc., etc.

Profit and loss statement (or Income statement)

A sheet showing income and expenses over a period of time, usually a month.

ALL PURPOSE

MONTHLY PROFIT AND LOSS STATEMENT

Date: September 30, 19—

			% of SALES
Sales		$ 20,000	100
Inventory-beginning of month	$ 2,000		
Food purchases for month	$ 8,500		
Total	$10,500		
Less final inventory	$ 1,500		
		$ 9,000	45
Gross Income		$ 11,000	55
Operating Expenses			
Salaries and Wages	$ 6,000		30
Rent	1,400		7
Laundry	200		1
Paper and cleaning supplies	200		1
Utilities	600		3
Replacements, repairs, and maintenance	400		2
Depreciation	400		2
Advertising	100		0.5
Taxes & Insurance	400		2
Miscellaneous	300		1.5
Total Expenses:		$ 10,000	50
Net Income (Profit)		1,000	5

The Profit and Loss Statement

This is usually computed for each month. It summarizes the business as follows:

  Sales (as shown on the register)
– Cost of food sold
= Gross income

  Gross income
– All other operating expenses
= Net income or profit

How to read the profit and loss statement:

1. Sales. These came to $20,000 for the month. This represents 100%.

2. Food Costs:

On hand at beginning of the month	$2000
Additional food purchased	$8500
	$10500
Inventory (what is left) at the end of the month	$1500
Subtract what is left from total. =	$9000, food used during month.

(The food cost of $9000 is 45% of the $20,000 in sales.)

3. Gross income: Subtract the food cost from the sales.

$ 20000
– 9000
$ 11000 = gross income

4. Operating expenses: Add them all up. Total is $10,000.
(The expenses amount to 50% of the sales.)

5. Net Income: Subtract the operating expenses from the gross income.

$ 11000
– 10000
$ 1000 Net income or profit.

The profit of $1000 is 5% of the $20,000 of sales.

Of course, the boss's salary is included in the "Salaries and Wages" item, so, while the business made 5% on total sales, he also made his own salary to put in his pocket. We'd say that this businessman was doing rather well.

ASSIGNMENT:

1. Define the following words used on the monthly profit and loss statement:
   a. Sales
   b. Inventory
   c. Gross income
   d. Operating expenses
   e. Depreciation
   f. Miscellaneous
   g. Profit

2. Your food sales for the month were $18,450.00, your food costs, $7,329.00. What was your gross income? If your operating expenses came to $10,105.00, what was your profit?

3. Prepare a balance sheet using the following information. (Set it up like the one on page 242.)

Food sales	$ 33,180.24
Food cost	$ 14,100.15
Expenses	
Salaries and wages	$ 12,521.42
Employees' meals	874.00
Laundry	659.00
Sundry supplies and expenses	346.08
Repairs	117.25
Heat, light, power, water, telephone	520.18
Insurance	187.32
Rent	450.00
Depreciation-furniture and fixtures	122.00
Legal services	186.00
Interest expense	90.00
Payroll taxes	754.18
Allowance for state and Federal taxes	750.00
Miscellaneous	150.00

Did the restaurant show a profit or a loss for the month?

How much was it?

Lesson 2 — The Annual Report

Objective: You will learn how an annual balance sheet shows the net worth of a business.

Related Information:

Balance sheets may be made up as often as needed, but they are always made up at least once a year. The end-of-year statement (annual report) shows the financial position of the business on that particular day. It is important for a businessman to know what his business is worth at the end of each year.

Terminology:

Assets:	The things the company owns: goods, food supplies, machinery, etc.
Fixed assets:	Those assets that cannot be moved: equipment, furniture, etc. They can be used over and over.
Depreciation:	Loss in value as a fixed asset wears out or becomes old.
Liabilities:	What the company owes: unpaid bills, loans.
Net worth:	The amount remaining when you subtract liabilities from the assets.

Assets
– Liabilities
= Net worth

You will not be required to make an annual report, but you should be able to understand this report.

Balance Sheet or Annual Report

ANNUAL REPORT

		December 31, 19–
CURRENT ASSETS		
Cash	$ 9,000	
Food inventory	1,500	
Other (Deposits with Public Utilities)	250	
Total Current Assets		$ 10,750
FIXED ASSETS		
Large equipment	$ 25,000	
Dining room fixtures	15,000	
Small kitchen equipment	2,000	
China, glass, silver, linens	2,500	
Miscellaneous	2,000	
Total Fixed Assets		$ 46,500
Total Assets		$ 57,250
CURRENT LIABILITIES		
Accounts payable	$ 6,000	
Installment accounts	$ 11,000	
Total Liabilities		$ 17,000
NET WORTH		$ 40,250

ASSIGNMENT:

1. An inventory of fixed assets in the cafeteria showed these items:

Number	Items	Value	Extension
30	Tables	$ 35.50 each	
180	Chairs	12.00 each	
40 doz	Glasses	2.00/doz	
30 doz	Cups and saucers	6.70/doz	
20 doz	Bowls	9.05/doz	
20 doz	Dishes, large (dinner)	11.80/doz	
30 doz	Dishes, medium	8.80/doz	
16	Platters	2.00 each	
30 doz	Knives	4.00/doz	
30 doz	Forks	1.80/doz	
42 doz	Teaspoons	1.00/doz	
22 doz	Tablespoons	1.80/doz	
14 doz	Trays	14.40/doz	
2	Stoves	800.00 each	
1	Deep fryer	438.00	
1	Dishwasher	1845.00	
1	Refrigerator	1138.00	
1	Freezer	1500.00	
1	Mixer	509.00	
1	Slicer	205.00	
36	Sugar servers	7.20/doz	
36	Salt cellars	2.40/doz	
36	Condiments	3.50/doz	
	Total		

2. Total up the *fixed assets* listed above.

3. Use the food-inventory list from the lesson on inventory (page 133) and determine the food inventory for a balance sheet or annual report.

4. Your total assets amounted to $15,975.00. Your liabilities $1,700.00. What is your net worth?

CONVERSION CHART

(The weights given here are all approximate)

Food Product	Tbsp.	Cup	Pint	Quart
Allspice	1/4 oz	4 ozs	8 ozs	1 lb
Apples, fresh, diced		8 ozs	1 lb	2 lbs
Bacon, raw, diced		8 ozs	1 lb	2 lbs
Bacon, cooked, diced		10½ ozs	1 lb 6 ozs	2 lbs 12 ozs
Bananas, sliced		8 ozs	1 lb	2 lbs
Baking powder	1/2 oz	6 ozs.	12 ozs.	1 lb 8 ozs
Baking soda	1/2 oz.	8 ozs	1 lb	2 lbs
Beef, cooked, diced		5½ ozs	11 ozs.	1 lb 6 ozs
Beef, raw, ground		8 ozs	1 lb	2 lbs
Barley	1/2 oz	8 ozs	1 lb	2 lbs
Bread crumbs, dry	1/4 oz	4½ ozs	9 ozs	1 lb 2 ozs
Bread crumbs, fresh		2 ozs	4 ozs	8 ozs
Butter	1/2 oz	8 ozs	1 lb	2 lbs
Cabbage, shredded		4 ozs	8 ozs	1 lb
Carrots, raw, diced		5 ozs	10 ozs	1 lb 4 ozs
Celery, raw, diced		4 ozs	8 ozs	1 lb
Cheese, diced		5½ ozs	11 ozs	1 lb 6 ozs
Cheese, grated or shredded	1/4 oz	4 ozs	8 ozs	1 lb
Chocolate, grated	1/4 oz	4 ozs	8 ozs	1 lb
Chocolate, melted	1/2 oz	8 ozs	1 lb	1 lb
Cinnamon, ground	1/4 oz	3½ ozs	7 ozs	14 ozs
Cloves, ground	1/4 oz	4 ozs	8 ozs	1 lb
Cloves, whole	1/4 oz	3 oz	6 ozs	12 ozs
Cocoa	1/4 oz	3½ ozs	7 ozs	14 ozs
Coconut, shredded, packed	1/4 oz	3½ ozs	7 ozs	14 ozs
Coffee, ground	1/4 oz	3 ozs	6 ozs	12 ozs
Cornmeal	1/3 oz	4¾ ozs	9½ ozs	1 lb 3 ozs
Cornstarch	1/3 oz	5¼ ozs	10½ ozs	1 lb 5 ozs
Corn syrup	3/4 oz	12 ozs	1 lb 8 ozs	3 lbs
Cracker crumbs	1/4 oz	4 ozs	8 ozs	1 lb
Cranberries, raw		4 ozs	8 ozs	1 lb
Currants, dried		5½ ozs	11 ozs	1 lb 6 ozs
Curry powder	1/4 oz	3½ ozs		
Dates, pitted		5½ ozs	11 ozs	1 lb 6 ozs
Egg whites	1/2 oz	8 ozs	1 lb	2 lbs
Eggs, whole	1/2 oz	8 ozs	1 lb	2 lbs
Egg yolks	1/2 oz	8 ozs	1 lb	2 lbs
Extracts	1/2 oz	8 ozs	1 lb	2 lbs
Flour, bread	1/3 oz	5 ozs	10 ozs	1 lb 4 ozs
Flour, pastry	1/3 oz	5 ozs	10 ozs	1 lb 4 ozs
Flour, cake	1/3 oz	4¾ ozs	9½ ozs	1 lb 3 ozs
Gelatin, flavored	3/8 oz	6½ ozs	13 ozs	1 lb 10 ozs
Gelatin, plain	1/3 oz	5 ozs	10 ozs	1 lb 4 ozs

Food Product	Tbsp.	Cup	Pint	Quart
Ginger	1/4 oz	3¼ ozs	6½ ozs	13 ozs
Glucose	3/4 oz	12 ozs	1 lb 8 ozs	3 lbs
Green peppers, diced	1/4 oz	4 ozs	8 ozs	1 lb
Ham, cooked, diced		5¼ ozs	10½ ozs	1 lb 5 ozs
Horseradish, prepared	1/2 oz	8 ozs	1 lb	2 lbs
Jam	5/8 oz	10 ozs	1 lb 4 ozs	2 lbs 8 ozs
Lemon juice	1/2 oz	8 ozs	1 lb	2 lbs
Lemon rind	1/4 oz	4 ozs	8 ozs	1 lb
Mace	1/4 oz	3¼ ozs	6½ ozs	13 ozs
Mayonnaise	1/2 oz	8 ozs	1 lb	2 lbs
Milk, liquid	1/2 oz	8 ozs	1 lb	2 lbs
Milk, powdered	1/4 oz	4½ ozs	9 ozs	1 lb 2 ozs
Molasses	3/4 oz	12 ozs	1 lb 8 ozs	3 lbs
Mustard, ground	1/4 oz	3¼ ozs	6½ ozs	13 ozs
Mustard, prepared	1/4 oz	4 ozs	8 ozs	1 lb
Nutmeats	1/4 oz	4 ozs	8 ozs	1 lb
Nutmeg, ground	1/4 oz	4¼ ozs	8½ ozs	1 lb 1 oz
Oats, rolled	1/4 oz	3 ozs	6 ozs	12 ozs
Oil, salad	1/2 oz	8 ozs	1 lb	2 lbs
Onions, chopped	1/3 oz	5½ ozs	11 ozs	1 lb 6 ozs
Peaches, canned		8 ozs	1 lb	2 lbs
Peas, dry, split	1/2 oz	7 ozs	14 ozs	1 lb 12 ozs
Pickles, chopped	1/3 oz	5¼ ozs	10½ ozs	1 lb 5 ozs
Pickle relish	1/3 oz	5¼ ozs	10½ ozs	1 lb 5 ozs
Pineapple, diced	1/2 oz	8 ozs	1 lb	2 lbs
Pimentos, chopped	1/2 oz	7 ozs	14 ozs	1 lb 12 ozs
Potatoes, cooked, diced		6½ ozs	13 ozs	1 lb 10 ozs
Prunes, dry		5½ ozs	11 ozs	1 lb 6 ozs
Raisins, seedless	1/3 oz	5¼ ozs	10½ ozs	1 lb 5 ozs
Rice, raw	1/2 oz	8 ozs	1 lb	2 lbs
Salmon, flaked		8 ozs	1 lb	2 lbs
Sage, ground	1/8 oz	2¼ ozs		
Savory	1/8 oz	2 ozs		
Salt	1/2 oz	8 ozs	1 lb	2 lbs
Shortening	1/2 oz	8 ozs	1 lb	2 lbs
Sugar, brown, packed	1/2 oz	8 ozs	1 lb	2 lbs
Sugar, granulated	1/2 oz	7½ ozs	15 ozs	1 lb 14 ozs
Sugar, powdered	1/3 oz	4¾ ozs	9½ ozs	1 lb 3 ozs
Tapioca, pearl	1/4 oz	4 ozs	8 ozs	1 lb
Tea	1/6 oz	2½ ozs	5 ozs	10 ozs
Tomatoes	1/2 oz	8 ozs	1 lb	2 lbs
Tuna fish, flaked	1/2 oz	8 ozs	1 lb	2 lbs
Vanilla, imitation	1/2 oz	8 ozs	1 lb	2 lbs
Vinegar	1/2 oz	8 ozs	1 lb	2 lbs
Water	1/2 oz	8 ozs	1 lb	2 lbs